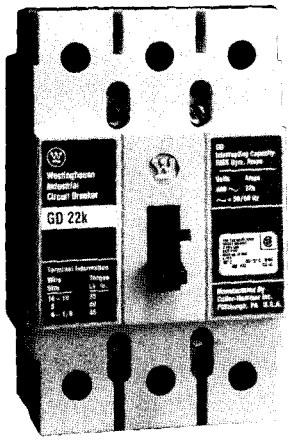
Cutler-Hammer

June 1995
New Information
Mailed to: E, D, C/29-100A, 31-400A, 31-500A

Westinghouse Series C® Molded Case Circuit Breakers G-Frame 15-100 Amperes



Dimensions, Inches (mm)

No. of Poles	Width	Height	Depth
1	1.0 (25.33)	4.88 (123.95)	2.81 (71.41)
2	2.0 (50.78)	4.88 (123.95)	2.81 (71.41)
3	3.0 (76)	4.88 (123.95)	2.81 (71.41)

Approximate Shipping Weight, Lbs. (kg)

Breaker Type	Number of Poles		
	1	2	3
GD	1.0 (.454)	1.5 (.680)	2.25 (1.021)

INTERRUPTING CAPACITY RATINGS

UL489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes)					
		Volts Ac (50/60 Hz)				Volts Dc	
		120	240	277	480	125	250 ① ②
GD	1	65,000	.....	22,000	.....	10,000②	.....
GD	2, 3	.....	65,000	.....	22,000	.....	10,000

① Two poles of 3-pole circuit breaker.
② Time constant is 8 milliseconds minimum.

STANDARDS

Series C molded case circuit breakers are designed to conform with the following standards:

- Australian Standard AS 2184, Molded 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, Circuit Breakers
- Japanese T-Mark Standard 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 Molded Case Circuit Breakers
- Swiss Electro-Technical Association Standard SEV 157-1, Safety Regulations for Circuit Breakers
- Underwriters Laboratories, Inc., Standard UL 489, Molded Case Circuit Breakers and Circuit Breaker Enclosures.
- 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 Switchgear and Control Gear, Circuit Breakers

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Series C molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

Westinghouse Series C Molded Case Circuit Breakers, G-Frame, 15-100 Amperes

CATALOG NUMBERING SYSTEM

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers.

Circuit Breaker Catalog Numbers

GD	3	100
Circuit Breaker Type	Number of Poles	Trip Amps
	1: 1-Pole	15
	2: 2-Pole	20
	3: 3-Pole	25
		30
		35
		40
		45
		50
		60
		70
		80
		90
		100

THERMAL-MAGNETIC CIRCUIT BREAKERS

Maximum Continuous Ampere Rating @ 40°C	480 Vac Maximum, 250 Vdc① 22 kAIC @ 480 Vac CATALOG NUMBERS (Includes Line and Load Terminals)		
	1-Pole	2-Pole	3-Pole
15	GD1015	GD2015	GD3015
20	GD1020	GD2020	GD3020
25	GD1025	GD2025	GD3025
30	GD1030	GD2030	GD3030
35	GD1035	GD2035	GD3035
40	GD1040	GD2040	GD3040
45	GD1045	GD2045	GD3045
50	GD1050	GD2050	GD3050
60	GD1060	GD2060	GD3060
70	GD1070	GD2070	GD3070
80	GD1080	GD2080	GD3080
90	GD1090	GD2090	GD3090
100	GD1100	GD2100	GD3100

Note: All GD breakers are HACR rated. All GD breakers are suitable for reverse feed application.

TERMINAL TYPES

For line and load-side. Terminals are UL listed as suitable for wire type and size given below.

Circuit Breaker Amperes	Terminal Type Material	Screw Head Type	Wire Type	AWG Wire Range	Metric Wire② Range (mm^2)
15-20	Clamp (Plated Steel)	Slotted	Cu/Al	#14-10	2.5-4
25-100	Pressure (Aluminum Body)	Slotted	Cu/Al	#10-1/0	4-50

Terminal Torque Values

AWG Wire Range	Torque Value lb-in	Torque Value N.m.
#14-#10	20	2.26
#8	40	4.52
#6-#4	45	5.09
#3-1/0	45	5.09

Further Information
Technical Data ..... TD 29-160
Dimensions ..... DS 29-170G
Time/Current Curves ..... AD 29-167G
Instantaneous Only Circuit Breakers (Motor Circuit Protector) ..... SD 29-120H

● 1-pole rating is 277 Vac maximum, 125 Vdc.
② Not UL listed sizes.

Cutler-Hammer
Westinghouse & Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
June 1995

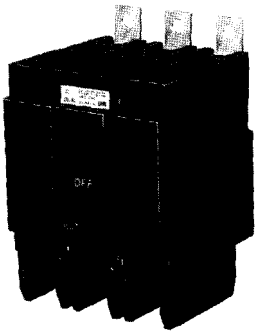
June 1995
Supersedes Technical Data 29-120,
pages 16.1-16.2 dated March 1988
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Westinghouse Series C® Molded Case Circuit Breakers G-Frame 15-100 Amperes

TYPE GB AND TYPE GHB BOLT-ON PANELBOARD CIRCUIT BREAKERS

1-Pole

2-Pole



3-Pole

These breakers meet the requirements of Federal Specification W-C-375b as follows:

Types GB, GHB, 120 and 240 Volts:
1 Pole: Class 11a
2, 3 Poles: Classes 10b, 11b, 12b, 14b, 15b

Type GHB, 277 and 480Y/277 Volts:
1 Pole: Classes 12c, 13a
2, 3 Poles: Class 13b

INTERRUPTING CAPACITY RATINGS

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes)					
		Volts Ac (50/60 Hz)				Volts Dc	
		120	240	277	480Y/277	125	125/250
GB	1	65,000	.....	.....	.....	14,000①	.....
GB	2, 3	.....	65,000	.....	.....	.....	14,000
GHB	1	65,000	.....	14,000	.....	14,000①	.....
GHB	2, 3	.....	65,000	.....	14,000	.....	14,000

On all 3-phase Delta, Grounded B phase applications, refer to Cutler-Hammer.

Note: All two- and three-pole breakers are of the common trip type.

① 15 through 70A breakers only.

TERMINALS

For load side only. Line side connection is extended tang which bolts directly to bus. Load terminals are UL listed as suitable for wire type and size listed below. When used with aluminum conductors, use joint compound.

Breaker Amperes	Type Terminal	Wire Type	Wire Range
15-20	Clamp	Cu/Al	#14-#10
25-100	Pressure	Cu/Al	#10-1/0

APPLICATION NOTES

- On all 3-phase Delta (240V) Grounded B phase applications, refer to Cutler-Hammer.
- 480Y/277V, circuit breakers (Type GHB) not suitable for 3-phase Delta (480V) Grounded B phase applications.
- All two- and three-pole circuit breakers are of the common trip type.
- Single-pole circuit breakers, 15 and 20A. Switching duty rated (SWD) for fluorescent lighting applications.
- Suitable for reverse feed applications.
- HACR rated.

Further Information
Technical Data ..... TD 29-160
Dimensions ..... DS 29-170G
Time/Current Curves ..... AD 29-167G
Instantaneous Only Circuit Breakers
(Motor Circuit Protector) ..... SD 29-120H

Westinghouse Series C Molded Case Circuit Breakers, G-Frame, 15-100 Amperes

TYPE GB AND TYPE GHB BOLT-ON PANELBOARD CIRCUIT BREAKERS

Type GB Breakers

Continuous Ampere Rating @ 40°C	CATALOG NUMBERS		
	1-Pole① 120 Volts Ac Max. 125 Volts Dc Max.④	2-Pole② 240 Volts Ac Max. 125/250 Volts Dc Max.	3-Pole③ 240 Volts Ac Max. 125/250 Volts Dc Max.⑤
15	GB1015⑥	GB2015	GB3015
20	GB1020⑥	GB2020	GB3020
25	GB1025	GB2025	GB3025
30	GB1030	GB2030	GB3030
35	GB1035	GB2035	GB3035
40	GB1040	GB2040	GB3040
45	GB1045	GB2045	GB3045
50	GB1050	GB2050	GB3050
60	GB1060	GB2060	GB3060
70	GB1070	GB2070	GB3070
80	GB1080	GB2080	GB3080
90	GB1090	GB2090	GB3090
100	GB1100	GB2100	GB3100

Type GHB Breakers

Continuous Ampere Rating @ 40°C	CATALOG NUMBERS		
	1-Pole① 277/480 Volts Ac Max. 125 Volts Dc Max.④	2-Pole② 277/480 Volts Ac Max. 125/250 Volts Dc Max.	3-Pole③ 277/480 Volts Ac Max. 125/250 Volts Dc Max.⑤
15	GHB1015⑥	GHB2015	GHB3015
20	GHB1020⑥	GHB2020	GHB3020
25	GHB1025	GHB2025	GHB3025
30	GHB1030	GHB2030	GHB3030
35	GHB1035	GHB2035	GHB3035
40	GHB1040	GHB2040	GHB3040
45	GHB1045	GHB2045	GHB3045
50	GHB1050	GHB2050	GHB3050
60	GHB1060	GHB2060	GHB3060
70	GHB1070	GHB2070	GHB3070
80	GHB1080	GHB2080	GHB3080
90	GHB1090	GHB2090	GHB3090
100	GHB1100	GHB2100	GHB3100

① 24 breakers in single carton; Approx. ship wt.: 16 lbs.
② 12 breakers in single carton; Approx. ship wt.: 16 lbs.
③ 8 breakers in single carton; Approx. ship wt.: 16 lbs.
④ 15-70 Amp only.
⑤ Use (2) outer poles.
⑥ Switching duty rated for fluorescent light applications only: GB, 120-volt Ac; GHB, 277-volt Ac.

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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
June 1995

June 1995
Supersedes Technical Data 29-120,
pages 16.3-16.4, dated September 1987
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

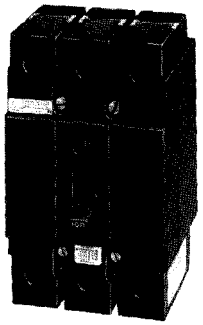
Westinghouse Series C® Molded Case Circuit Breakers G-Frame 15-100 Amperes

TYPE GC AND TYPE GHC CIRCUIT BREAKERS

15-100 Amperes, 120, 240, 277, 480Y/277V, 50/60 Hz, 125, 125/250V, Dc 1, 2, and 3 Poles

1-Pole

2-Pole



3-Pole

These circuit breakers meet the requirements of Federal Specification W-C-375b as follows:

Type GC, 120 and 240 Volts:
1 Pole: Class 11a
2, 3 Poles: Classes 10b, 11b, 12b, 14b, 15b

Type GHC, 277 and 480Y/277 Volts:
1 Pole: Classes 12c, 13a
2, 3 Poles: Class 13b

INTERRUPTING CAPACITY RATINGS

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes)					
		Volts Ac (50/60 Hz)				Volts Dc	
		120	240	277	480/277	125	125/250
GC	1	65,000	.....	.....	.....	14,000①	.....
GC	2, 3	.....	65,000	.....	.....	.....	14,000
GHC	1	65,000	.....	14,000	.....	14,000①	.....
GHC	2, 3	.....	65,000	.....	14,000	.....	14,000

Special Purpose Breakers (see page 6)

TERMINALS

Line and load side terminals are UL listed as suitable for wire type and size listed below. When used with aluminum conductors, use joint compound.

Breaker Amperes	Type Terminal	Wire Type	Wire Range
15-20	Clamp	Cu/Al	#14-#10 AWG
25-100	Pressure	Cu/Al	#10-1/0 AWG

APPLICATION NOTES

- On all 3-phase Delta (240V) Grounded B phase applications, refer to Cutler-Hammer.
- 480Y/277V, circuit breakers (Type GHC) not suitable for 3-phase Delta (480V)
- All two- and three-pole circuit breakers are of the common trip type.
- Single-pole circuit breakers, 15 and 20A. Switching duty rated (SWD) for fluorescent lighting applications.
- Suitable for reverse feed applications.
- HACR rated.

Further Information
Technical Data ..... TD 29-160
Dimensions ..... DS 29-170G
Time/Current Curves ..... AD 29-167G
Instantaneous Only Circuit Breakers
(Motor Circuit Protector) ..... SD 29-120H

① 15 through 70A breakers only.

Westinghouse Series C Molded Case Circuit Breakers, G-Frame, 15-100 Amperes

TYPE GC AND TYPE GHC CIRCUIT BREAKERS

Type GC Circuit Breakers

Continuous Ampere Rating @ 40°C	CATALOG NUMBERS		
	1-Pole② 120V Ac Max. 125V Dc Max.⑥	2-Pole③ 240V Ac Max. 125/250V Dc Max.	3-Pole④ 240V Ac Max. 125/250V Dc Max.⑦
15	GC1015⑤⑧	GC2015⑧	GC3015⑧
20	GC1020⑤⑧	GC2020⑧	GC3020⑧
25	GC1025	GC2025	GC3025
30	GC1030	GC2030	GC3030
35	GC1035	GC2035	GC3035
40	GC1040	GC2040	GC3040
45	GC1045	GC2045	GC3045
50	GC1050	GC2050	GC3050
60	GC1060	GC2060	GC3060
70	GC1070	GC2070	GC3070
80	GC1080	GC2080	GC3080
90	GC1090	GC2090	GC3090
100	GC1100	GC2100	GC3100

Type GHC Circuit Breakers

Continuous Ampere Rating @ 40°C	CATALOG NUMBERS		
	1-Pole② 277V Ac Max. 125V Dc Max.⑥	2-Pole③ 480Y/277V Ac Max. 125/250V Dc Max.	3-Pole④ 480Y/277V Ac Max. 125/250V Dc Max.⑦
15	GHC1015⑤⑧	GHC2015⑧	GHC3015⑧
20	GHC1020⑤⑧	GHC2020⑧	GHC3020⑧
25	GHC1025	GHC2025	GHC3025
30	GHC1030	GHC2030	GHC3030
35	GHC1035	GHC2035	GHC3035
40	GHC1040	GHC2040	GHC3040
45	GHC1045	GHC2045	GHC3045
50	GHC1050	GHC2050	GHC3050
60	GHC1060	GHC2060	GHC3060
70	GHC1070	GHC2070	GHC3070
80	GHC1080	GHC2080	GHC3080
90	GHC1090	GHC2090	GHC3090
100	GHC1100	GHC2100	GHC3100

Special Purpose Breakers

These are Types GC and GHC circuit breakers with binding head screw-type terminals on line and load side. These circuit breakers with screw-type terminals (.190-32) will be marked "Special purpose breaker not for general use". To order this special breaker, use the catalog number below.

Type GC Circuit Breakers

Continuous Ampere Rating @ 40°C	CATALOG NUMBERS		
	1-Pole② 120V Ac Max. 125V Dc Max.⑥	2-Pole③ 240V Ac Max. 125/250V Dc Max.	3-Pole④ 240V Ac Max. 125/250V Dc Max.⑦
25	GC1025D	GC2025D	GC3025D
30	GC1030D	GC2030D	GC3030D
35	GC1035D	GC2035D	GC3035D
40	GC1040D	GC2040D	GC3040D
45	GC1045D	GC2045D	GC3045D
50	GC1050D	GC2050D	GC3050D
55	GC1055D	GC2055D	GC3055D
60	GC1060D	GC2060D	GC3060D

Type GHC Circuit Breakers

Continuous Ampere Rating @ 40°C	CATALOG NUMBERS		
	1-Pole② 277V Ac Max. 125V Dc Max.⑥	2-Pole③ 480Y/277V Ac Max. 125/250V Dc Max.	3-Pole④ 480Y/277V Ac Max. 125/250V Dc Max.⑦
25	GHC1025D	GHC2025D	GHC3025D
30	GHC1030D	GHC2030D	GHC3030D
35	GHC1035D	GHC2035D	GHC3035D
40	GHC1040D	GHC2040D	GHC3040D
45	GHC1045D	GHC2045D	GHC3045D
50	GHC1050D	GHC2050D	GHC3050D
55	GHC1055D	GHC2055D	GHC3055D
60	GHC1060D	GHC2060D	GHC3060D

① For IEC-157-1 (P1) Ratings, refer to Cutler-Hammer.
② 24 circuit breakers in single carton; approx. ship wt.: 18 lbs.
③ 12 circuit breakers in single carton; approx. ship wt.: 18 lbs.
④ 8 circuit breakers in single carton; approx. ship wt.: 18 lbs.
⑤ SWD rated.
⑥ 15-70A only.
● Use (2) outside poles.
⑧ Use .190-32 screw type clamp terminals.

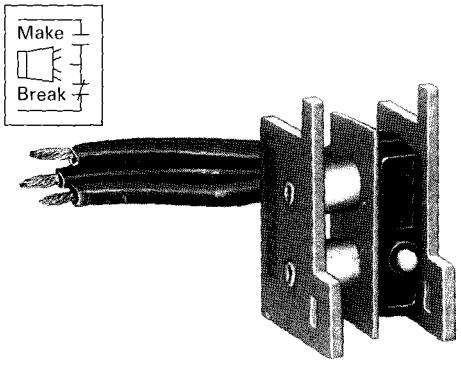
Cutler-Hammer
Westinghouse & Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
June 1995

June 1995
Supersedes Technical Data 29-120,
page 16.6, dated September 1987
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Westinghouse Series C® G-Frame Internal Accessories

ALARM/LOCKOUT SWITCH



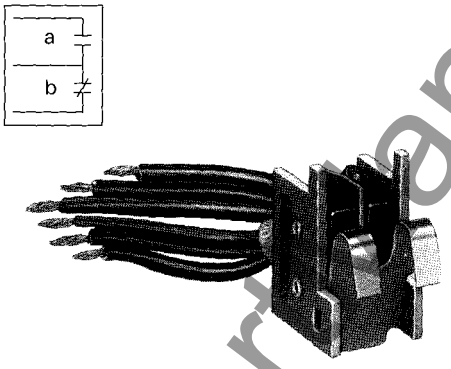
For remote indication of automatic trip operation. Does not function with manual switching; however, it will operate when either a shunt trip or undervoltage release is operated. A "make" contact closes and a "break" contact opens when the alarm/lockout switch operates. The switch automatically resets when the circuit breaker is reset.

Either and auxiliary switch or an alarm/lockout switch may be mounted in a two-pole circuit breaker. The two-pole circuit breaker will not accept either the shunt trip or UVR.

Ordering Information

Electrical Ratings			Contact Arrangement	STYLE NUMBERS ①②④
Volts	Frequency	Amps		
Alarm Switch				
240	50/60 Hz	6	1 make/ 1 break	1288C75G03
Alarm Switch Auxiliary Switches Combination				
240	50/60 Hz	6	1 make/ 1 break and 1a/1b	1288C76G09

AUXILIARY SWITCH

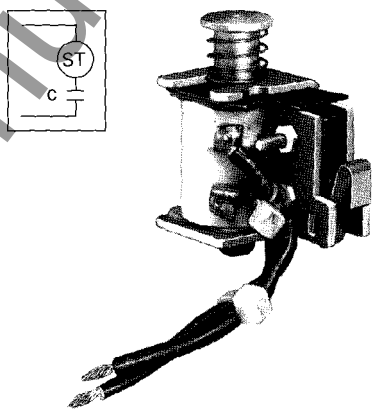


For auxiliary control circuits. Miniature switches mount within circuit breaker cover. Commonly used for remote indication of open/closed circuit breaker status as well as electrically interlocking circuitry. "a" contacts are open with the circuit breaker open. "b" contacts are closed with the circuit breaker open.

Ordering Information

Electrical Ratings			Contact Arrangement	STYLE NUMBERS ①②④
Volts	Frequency	Amps		
240	50/60 Hz	6	1a/1b	1288C74G03
240	50/60 Hz	6	2a/2b	1288C73G03

SHUNT TRIP



For tripping the circuit breaker from remote point. Solenoid device mounts within circuit breaker cover. Circuit breaker trips when coil is energized.

Since coil is intermittent rated only, a cut-off switch is included to interrupt the coil circuit when the circuit breaker opens.

Ordering Information

Electrical Ratings			STYLE NUMBERS ①②③
Volts	Frequency	Amps	
120	50/60 Hz	6	1373D62G01
240	50/60 Hz	2.1	1373D62G02
12	Dc	2.8	1373D62G15
24	Dc	5.7	1373D62G16

① Includes 24-inch external pigtail leads, #18 AWG (16-.010).
② A maximum of two internal accessories may be mounted in a three-pole circuit breaker.
③ Suitable for mounting in left pole only of 3-pole breaker.
④ Suitable for mounting in right pole only of 2- or 3-pole breaker.

Note

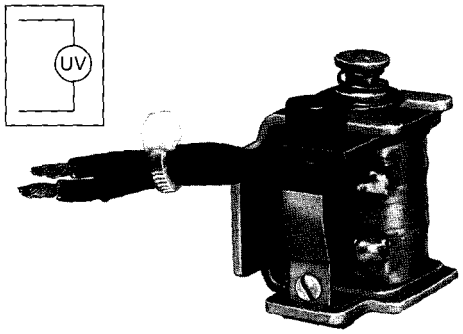
GB/GHB/GC/GHC circuit breakers are factory sealed. Underwriters Laboratories, Inc., requires that internal accessories be installed at the factory.

Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

Westinghouse Series C G-Frame, Internal Accessories

UNDERVOLTAGE RELEASE



For undervoltage protection. Solenoid device mounts within circuit breaker cover. Trips circuit breaker within range of 35 to 70% of rated coil voltage. The UVR is reset by the circuit breaker cross bar during an opening operation. The UVR is not designed for and should not be used as a circuit interlock.

Ordering Information

Electrical Ratings			STYLE NUMBERS ①②③
Volts	Frequency	Amps	
120	50/60 Hz	0.05	1373D62G03
24	50/60 Hz	0.22	1373D62G04
48	50/60 Hz	0.11	1373D62G05
60	50/60 Hz	0.10	1373D62G06
110	50 Hz	0.049	1373D62G07
208	60 Hz	0.026	1373D62G08
220	50 Hz	0.025	1373D62G09
240	50/60 Hz	0.024	1373D62G10
380	50 Hz	0.015	1373D62G11
415	50 Hz	0.013	1373D62G12
440	50 Hz	0.012	1373D62G13
480	60 Hz	0.01	1373D62G14

Note

G-frame circuit breakers are factory sealed. Underwriters Laboratories, Inc., requires that internal accessories be installed at the factory.

Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

① Includes 24 inch external pigtail leads, #18 AWG (16-.010).
② A maximum of two internal accessories may be mounted in a three-pole circuit breaker.
③ Suitable for mounting in left pole only of 3-pole breaker.

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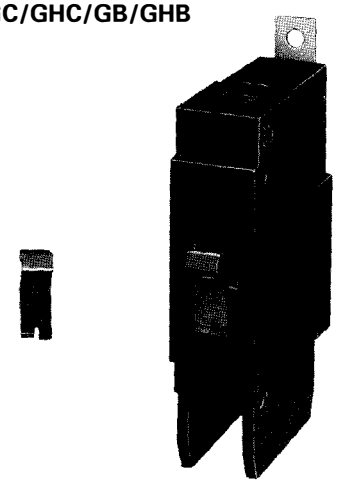
Printed in U.S.A.
June 1995

June 1995
Supersedes Technical Data 29-120,
page 16.5, dated September 1987
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Westinghouse Series C® G-Frame External Accessories

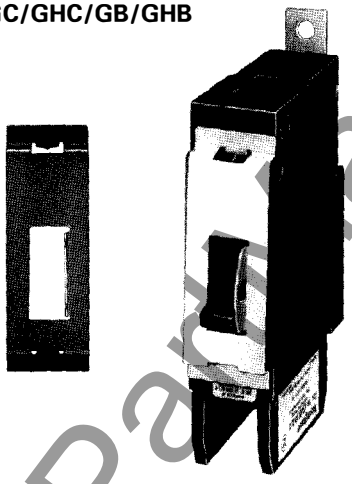
LOCK DOG (NON-PADLOCKABLE) GD/GC/GHC/GB/GHB



Ordering Information

STYLE NUMBER	No. Units in Package
1294C01H01	1

PADLOCKABLE HANDLE GD/GC/GHC/GB/GHB



Ordering Information

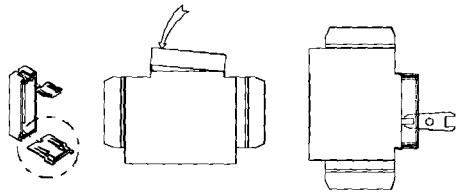
STYLE NUMBER	No. Units in Package
1223C77G03	10

(Accepts .285 Lock Shank)

MOUNTING HARDWARE GD/GC/GHC

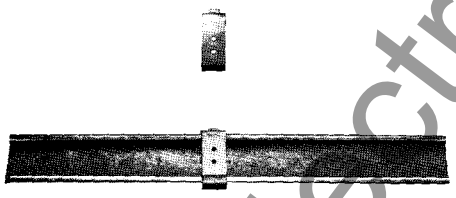
STYLE NUMBER	No. Units in Package
624B375G23	1●

KEY OPERATED ATTACHMENT GD/GC/GHC

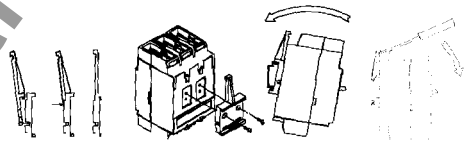


STYLE NUMBER	No. Units in Package
GK0A	10

DIN RAIL ADAPTOR①② GD/GC/GHC



1225C79G01



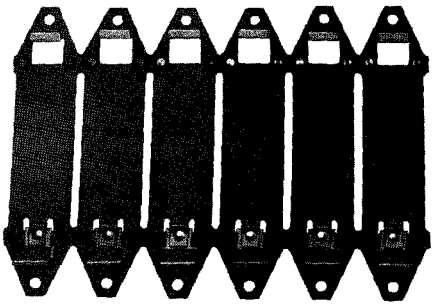
1225C79G02

Ordering Information

STYLE NUMBERS	No. Units in Package
1225C79G01	10
1225C79G02⑤	10

① For use with standard 35mm Din Rail such as, 35 x 7.5 or 35 x 15mm per Din EN50022.
② Adaptor mounting screws included are for use with (2) and (3) pole circuit breakers. Adaptors for (1) pole circuit breakers clip into the base molding.
③ Suitable for mounting (1) two or three pole circuit breaker.
④ Suitable for mounting (6) single pole circuit breakers.
⑤ For use on 3-pole breakers only.

BASE MOUNTING PLATE● GD/GC/GHC

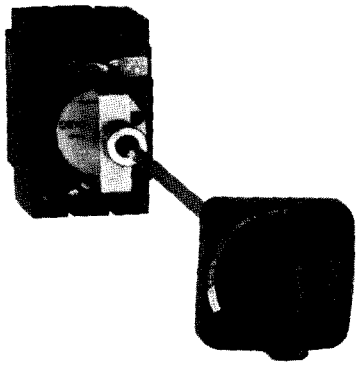


Ordering Information

STYLE NUMBER	No. Units in Package
207B513G01	1

Westinghouse Series C G-Frame, External Accessories

HANDLE MECHANISM



These compact Westinghouse rotary handle mechanisms are especially designed for use with the GD/GC/GHC circuit protection devices. The Close-Coupled version is designed for mounting in a shallow enclosure, while the Vari-Depth is suitable for deep enclosures.

Both G-frame handle mechanisms are suitable for use on NEMA 1 enclosures. In addition, the Vari-Depth handle mechanism is offered for use with NEMA 3R, 12, and 4 enclosures.

The new handles are a compact, plastic, general purpose design which is easy to install. These mechanism are commonly used where high volume, standardized enclosures are being fabricated.

The Close-Coupled design is available with or without a shroud. The handle is offered in two colors; black or yellow. An escutcheon ring and interlock clip are provided as standard. This standard design includes a lock-off feature.

The Vari-Depth design includes an operating mechanism, shaft, and external handle. The handle is available in two colors; black or yellow. An external lock-off is included in the handle design. The shaft may be cut to size to fit the enclosure.

UL and CSA listed.

Ordering Information

CATALOG NUMBERS	Breaker Frame	Enclosure Type	Handle Color	Shaft Length	Shroud Included
G-Frame Vari-Depth Design (Catalog Number includes complete assembly consisting of handle, shaft, and operating mechanism.)					
HRGCV11L	GD/GC/GHC	NEMA 1	Black	14″	. . . . .
HRGCV31L	GD/GC/GHC	NEMA 1	Yellow	14″	. . . . .
HRGCV14L	GD/GC/GHC	NEMA 3R/12/4	Black	14″	. . . . .
HRGCV34L	GD/GC/GHC	NEMA 3R/12/4	Yellow	14″	. . . . .
G-Frame Close-Coupled Design (Catalog Number includes complete assembly consisting of operating handle and door interlock.)					
HRGCC10	GD/GC/GHC	NEMA 1	Black	. . . . .	No
HRGCC1S	GD/GC/GHC	NEMA 1	Black	. . . . .	Yes
HRGCC30	GD/GC/GHC	NEMA 1	Yellow	. . . . .	No
HRGCC3S	GD/GC/GHC	NEMA 1	Yellow	. . . . .	Yes

Cutler-Hammer
Westinghouse & Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
June 1995

August 1996
Supersedes Selection Data 29-120F,
pages 5-6, dated June 1994
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® Molded Case Circuit Breakers F-Frame 10-225 Amperes

MOLDED CASE SWITCHES

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.

Molded Case Switch High Magnetic Trip Setting

Frame	Rating	Trip Setting (Amps)	Tolerance (Percent)
EHD, FD	100	2400	±20
EHD, FD	150	2400	±20
FD	225	2400	±20

Maximum Continuous Ampere Rating @ 40°C	480 Vac Maximum, 250 Vdc	600 Vac Maximum, 250 Vdc
	Complete Circuit Breaker with Load Side Terminals Only	Complete Circuit Breaker with Load Side Terminals Only
	CATALOG NUMBERS	
2-Pole		
100	EHD2100K	FD2100K
150	—	FD2150K
225	—	FD2225K
3-Pole		
100	EHD3100K	FD3100K
150	—	FD3150K
225	—	FD3225K
4-Pole		
100	—	FD4100K
150	—	FD4150K
225	—	FD4225K

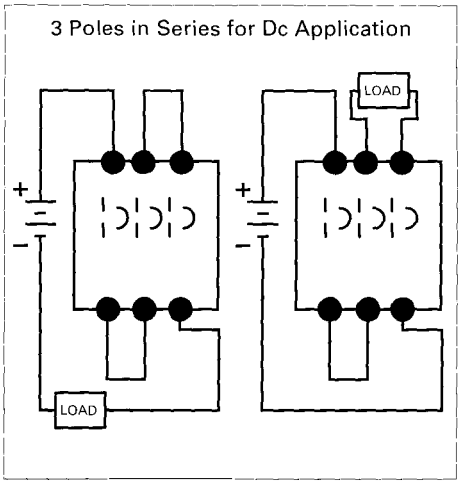
CIRCUIT BREAKERS FOR DC APPLICATIONS

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.

Maximum Continuous Ampere Rating @ 40°C	High Interrupting Capacity
	35 kAIC @ 600 Vdc Complete Circuit Breaker with Line and Load Side Terminals
	CATALOG NUMBERS
15	HFDDC3015L
20	HFDDC3020L
25	HFDDC3025L
30	HFDDC3030L
35	HFDDC3035L
40	HFDDC3040L
45	HFDDC3045L
50	HFDDC3050L
60	HFDDC3060L
70	HFDDC3070L
80	HFDDC3080L
90	HFDDC3090L
100	HFDDC3100L
110	HFDDC3110L
125	HFDDC3125L
150	HFDDC3150L

Series Connection Diagrams for DC Application

3 Poles in Series for Dc Application



Series C Molded Case Circuit Breakers, F-Frame, 10-225 Amperes

Cutler-Hammer

Westinghouse & Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.

August 1996

Cutler-Hammer
Westinghouse &
Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
Supersedes Frame Book 29-101, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® Molded Case Circuit Breakers F-Frame 10-225 Amperes

MOLDED CASE SWITCHES

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.

Molded Case Switch High Magnetic Trip Setting

Frame	Rating	Trip Setting (Amps)	Tolerance (Percent)
FD	100	1050	±20
FD	150	2400	±20

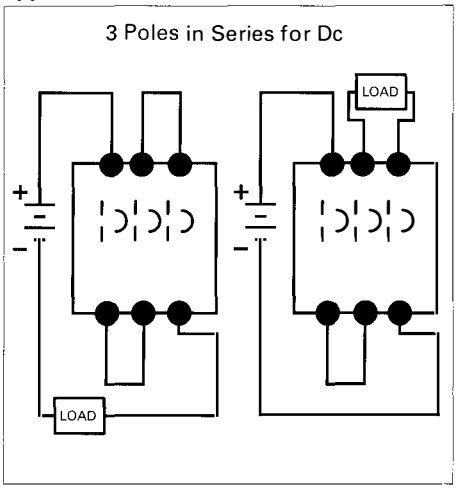
Maximum Continuous Ampere Rating @ 40°C	**250 Vac Maximum, 250 Vdc** Complete Circuit Breaker with Load Side Terminals Only	**600 Vac Maximum, 250 Vdc** Complete Circuit Breaker with Load Side Terminals Only
	CATALOG NUMBERS	
2-Pole		
100	EHD2100K	FD2100K
150	—	FD2150K
3-Pole		
100	EHD3100K	FD3100K
150	—	FD3150K
4-Pole		
100	—	FD4100K
150	—	FD4150K

CIRCUIT BREAKERS FOR DC APPLICATIONS

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.

Maximum Continuous Ampere Rating @ 40°C	**High Interrupting Capacity** 35 kAIC @ 600 Vdc Complete Circuit Breaker with Line and Load Side Terminals
	CATALOG NUMBERS
15	HFDDC3015L
20	HFDDC3020L
25	HFDDC3025L
30	HFDDC3030L
35	HFDDC3035L
40	HFDDC3040L
45	HFDDC3045L
50	HFDDC3050L
60	HFDDC3060L
70	HFDDC3070L
80	HFDDC3080L
90	HFDDC3090L
100	HFDDC3100L
110	HFDDC3110L
125	HFDDC3125L
150	HFDDC3150L

Series Connection Diagrams for DC Application



Series C Molded Case Circuit Breakers, F-Frame, 10-225 Amperes

Cutler-Hammer
Westinghouse &
Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.

June 1994

August 1996
Supersedes Selection Data 29-120F,
pages 7-8, dated May 1995
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Westinghouse Series C® F-Frame Termination Accessories

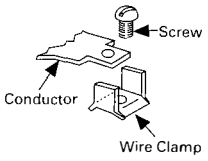
LINE AND LOAD TERMINALS

Line and load terminals provide wire connnecting capabilities for specific ranges of continuous current ratings and wire types. Except as noted, terminals comply with Underwriters Laboratories, Inc., Standard UL486A or UL486B. Unless otherwise specified, F-frame circuit breakers are factory equipped with load terminals only.

Ordering Information
F-frame circuit breakers and molded case switches have load terminals only as standard equipment. When standard line-end terminals (same as standard load-end terminals) are required, add suffix L to the circuit breaker catalog number. When nonstandard or optional line and/or load terminals are required, order by style number (no charge when ordered with circuit breaker). Specify if factory installation required.

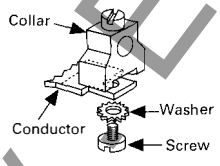
Line and Load Terminals

Maximum Breaker Amps	Terminal Body Material	Wire Type	AWG Wire Range	Metric Wire Range mm²	CATALOG NUMBERS Package of 3 Terminals
Standard Pressure Type Terminals					
20(EHD)	Steel	Cu/Al	#14-#10	2.5-4	3T20FB①
100	Steel	Cu/Al	#14-1/0	2.5-50	3T100FB
150	Aluminum	Cu/Al	#4-4/0	25-95	3TA150FB
225	Aluminum	Cu/Al	#4-4/0	25-95	3TA225FD
Optional Pressure Terminals					
50	Aluminum	Cu/Al	#14-#4	2.5-16	3TA50FB①
100	Aluminum	Cu/Al	#14-1/0	2.5-50	3TA100FD
150	Stainless Steel	Cu	#4-4/0	25-95	3T150FB
225	Aluminum	Cu/Al	#6-300 MCM	16-150	3TA225FDK②



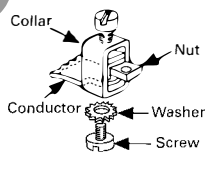
3T20FB

Assemble wire clamp to bottom of conductor as shown.



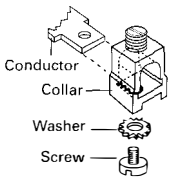
3TA50FB

Assemble collar on top of conductor as shown. Tighten securely with screw and washer.



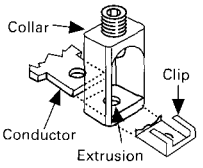
3T100FB
3T150FB

Insert collar enclosing conductor as shown. Locate nut on top of conductor and tighten securely with screw and washer. **Caution:** Collar must surround conductor.



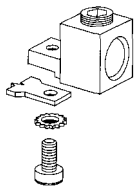
3TA100FD

Collar slides onto conductor and is held in position by a screw and lockwasher.



3TA150FB
3TA225FD

Insert collar enclosing conductor and center on extrusion on collar. Install clip with legs on top of conductor and snap end around bottom of collar.



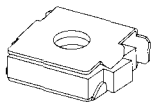
3TA225FDK

Assemble collar on top of conductor as shown. Tighten securely with screw and washer. Terminal shield must be used with this collar.

① Not for use with ED, EDH, EDC breakers.
② Includes terminal shield kit. Adds approximately 3 inches to breaker height. Available for use on 3-pole breaker only.

Westinghouse Series C F-Frame Termination Accessories

KEEPER NUT

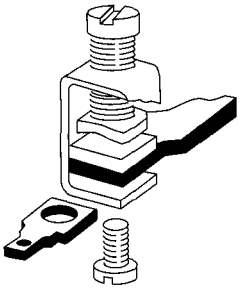


The keeper nut slides onto the line or load conductor of the circuit breaker and acts as a threaded adapter for the conductor to accept a ring terminal or other bolt-on connector. The keeper nut is available with English and metric thread sizes. Screws and washers are supplied by customer. (Field installation only.) Listed per UL File E7819.

Ordering Information

Thread Type	Thread Size	CATALOG NUMBERS
		Package of 12 (Priced Individually)
Imperial	10-32	KPR1A
Metric	M-5	KPR1AM

CONTROL WIRE TERMINAL KIT



For use with steel or stainless steel① terminals only.

Ordering Information
Package of 12. Priced individually.

CATALOG NUMBER
FCWTK

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.

Ordering Information
Base-mounting hardware is supplied at no charge when ordered with a circuit breaker or molded case switch. When ordering separately, refer to price list.

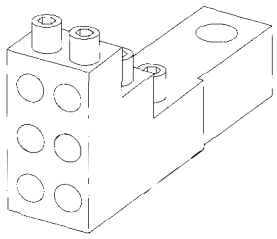
Imperial Thread

No. of Poles	Description	Type of Mounting	STYLE NUMBERS
1	.164-32 x 3.188 inch Pan-Head Steel Screws, Lockwashers, and Clamps	Individual	624B375G01
		Group (one set of hardware for two circuit breakers)	624B375G02
2	.164-32 x 1.5 inch Pan-Head Steel Screws and Lockwashers	Individual	4218B80G01
3,4	.164-32 x 1.5 inch Pan-Head Steel Screws and Lockwashers	Individual	BMH1

Metric Thread

No. of Poles	Description	Type of Mounting	STYLE NUMBERS
1	M4 - 0.7 x 80 mm Pan-Head Steel Screws, Lockwashers, and Clamps	Individual	4218B80G09
		Group (one set of hardware for two circuit breakers)	4218B80G10
2	M4 - 0.7 x 38 mm Pan-Head Steel Screws and Lockwashers	Individual	4218B80G11
3,4	M4 - 0.7 x 38 mm Pan-Head Steel Screws and Lockwashers	Individual	BMH1M

MULTI WIRE CONNECTORS



Field-installed multi wire connectors for the load side (OFF) end terminals. They are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multi Wire Lug Kits include mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed for copper only as used on the load side (OFF) end.

Ordering Information
Package of 3.

Maximum Amperes	KIT CATALOG NUMBERS	Wires Per Terminal	Wire Size Range AWG Cu	Pressure Screw Torque (lb/in)
225	3TA150F3K	3	#14-2	70
225	3TA150F6K	6	#14-6	25

① Not for use with 3T20FB terminal.

Cutler-Hammer
Westinghouse & Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
August 1996

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Westinghouse &
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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

May 1995
Supersedes Selection Data 29-120F, pages 7-8,
dated June 1994
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Westinghouse Series C® F-Frame Termination Accessories

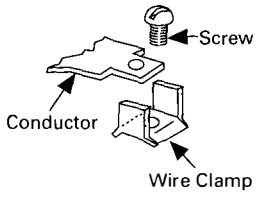
LINE AND LOAD TERMINALS

Line and load terminals provide wire connnecting capabilities for specific ranges of continuous current ratings and wire types. Except as noted, terminals comply with Underwriters Laboratories, Inc., Standard UL486A or UL486B. Unless otherwise specified, F-frame circuit breakers are factory equipped with load terminals only.

Ordering Information
F-frame circuit breakers and molded case switches have load terminals only as standard equipment. When standard line-end terminals (same as standard load-end terminals) are required, add suffix L to the circuit breaker catalog number. When nonstandard or optional line and/or load terminals are required, order by style number (no charge when ordered with circuit breaker). Specify if factory installation required.

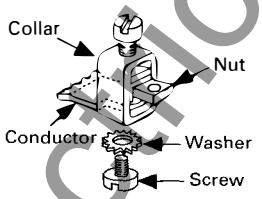
Line and Load Terminals

Maximum Breaker Amps	Terminal Body Material	Wire Type	AWG Wire Range	Metric Wire Range mm²	CATALOG NUMBERS Package of 3 Terminals
Standard Pressure Type Terminals					
20(EHD)	Steel	Cu/Al	#14-#10	2.5-4	3T20FB●
100	Steel	Cu/Al	#14-1/0	2.5-50	3T100FB
150	Aluminum	Cu/Al	#4-4/0	25-95	3TA150FB
225	Aluminum	Cu/Al	#4-4/0	25-95	3TA225FD
Optional Pressure Terminals					
50	Aluminum	Cu/Al	#14-#4	2.5-16	3TA50FB●
100	Aluminum	Cu/Al	#14-1/0	2.5-50	3TA100FD
150	Stainless Steel	Cu	#4-4/0	25-95	3T150FB



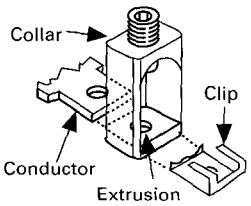
3T20FB

Assemble wire clamp to bottom of conductor as shown.



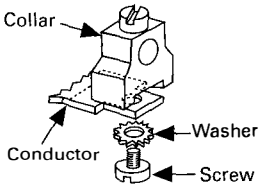
3T100FB
3T150FB

Insert collar enclosing conductor as shown. Locate nut on top of conductor and tighten securely with screw and washer. **Caution:** Collar must surround conductor.



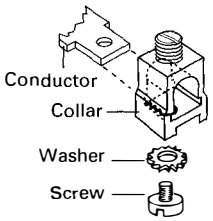
3TA150FB
3TA225FD

Insert collar enclosing conductor and center on extrusion on collar. Install clip with legs on top of conductor and snap end around bottom of collar.



3TA50FB

Assemble collar on top of conductor as shown. Tighten securely with screw and washer.



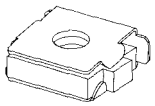
3TA100FD

Collar slides onto conductor and is held in position by a screw and lockwasher.

① Not for use with ED, EDH, EDC breakers.

Westinghouse Series C F-Frame Termination Accessories

KEEPER NUT

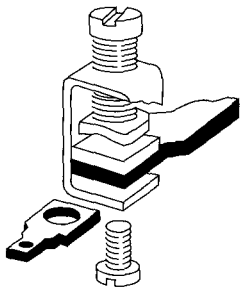


The keeper nut slides onto the line or load conductor of the circuit breaker and acts as a threaded adapter for the conductor to accept a ring terminal or other bolt-on connector. The keeper nut is available with English and metric thread sizes. Screws and washers are supplied by customer. (Field installation only.) Listed per UL File E7819.

Ordering Information

Thread Type	Thread Size	CATALOG NUMBERS
		Package of 12 (Priced Individually)
Imperial	10-32	KPR1A
Metric	M-5	KPR1AM

CONTROL WIRE TERMINAL KIT



For use with steel or stainless steel● terminals only.

Ordering Information
Package of 12. Priced individually.

CATALOG NUMBER
FCWTK

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.

Ordering Information
Base-mounting hardware is supplied at no charge when ordered with a circuit breaker or molded case switch. When ordering separately, refer to price list.

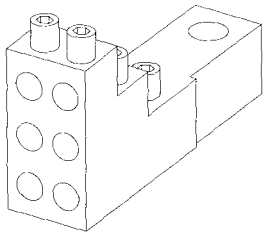
Imperial Thread

No. of Poles	Description	Type of Mounting	STYLE NUMBERS
1	.164-32 x 3.188 inch Pan-Head Steel Screws, Lockwashers, and Clamps	Individual Group (one set of hardware for two circuit breakers)	624B375G01 624B375G02
2	.164-32 x 1.5 inch Pan-Head Steel Screws and Lockwashers	Individual	4218B80G01
3,4	.164-32 x 1.5 inch Pan-Head Steel Screws and Lockwashers	Individual	4218B80G02

Metric Thread

No. of Poles	Description	Type of Mounting	STYLE NUMBERS
1	M4 - 0.7 x 80 mm Pan-Head Steel Screws, Lockwashers, and Clamps	Individual Group (one set of hardware for two circuit breakers)	4218B80G09 4218B80G10
2	M4 - 0.7 x 38 mm Pan-Head Steel Screws and Lockwashers	Individual	4218B80G11
3,4	M4 - 0.7 x 38 mm Pan-Head Steel Screws and Lockwashers	Individual	4218B80G12

MULTI WIRE CONNECTORS



Field-installed multi wire connectors for the load side (OFF) end terminals. They are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multi Wire Lug Kits include mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed for copper only as used on the load side (OFF) end.

Ordering Information
Package of 3.

Maximum Amperes	KIT CATALOG NUMBERS	Wires Per Terminal	Wire Size Range AWG Cu	Pressure Screw Torque (lb/in)
150	3TA150F3K	3	#14-2	70
150	3TA150F6K	6	#14-6	25

● Not for use with 3T20FB terminal.

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Printed in U.S.A.
May 1995

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June 1994
Supersedes Frame Book 29-101, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
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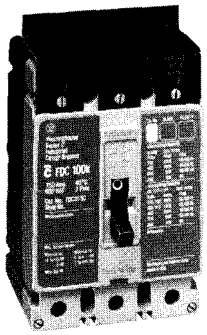
Series C® F-Frame Termination Accessories

TERMINAL SHIELDS

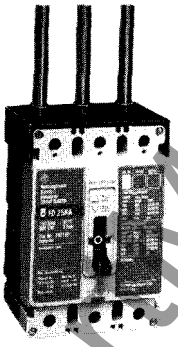


The terminal shield provides protection against accidental contact with live line terminations. Terminal shields are formed from high dielectric insulating material and fasten over the front terminal access openings. Small holes in the shields provide limited access to the terminals for tightening connectors. Terminal shields are listed per UL File E7819. (Field installation only.)

Ordering Information
The terminal shield is available for line terminal areas in 1-, 2-, 3- and 4-pole circuit breakers. Special terminal shields are also available for use when an electrical (solenoid) operator is mounted on the circuit breaker. The standard style number by pole for each terminal shield (shown in table below) is for a package of 10 and is priced per each package. Special terminal shields are packaged individually.

Number of Poles	STYLE NUMBERS	
	Standard (Package of 10) (Priced Individually)	Special
1	625B229G06	. . . . .
2	625B229G07	. . . . .
3	625B229G08	4210B95G01
4	625B229G09	4210B95G02

TERMINAL END COVERS

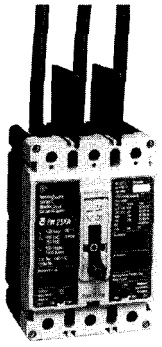


The terminal end covers are designed for use in motor control center applications where, because of confined spaces, line side conductors are normally custom fitted. The molded end covers are made of high dielectric glass-polyester and slide over the line ends of the circuit breaker. Close fitting conductor openings are molded into the end covers. The end cover and circuit breaker case fit together to form terminal compartments that isolate discharged ionizing gases during circuit breaker tripping. Terminal end covers are available with two conductor opening diameters, 0.25 and 0.41 inch, and are listed per UL File E7819. (Field installation only.)

Ordering Information
The terminal end cover is available for 3-pole circuit breakers only. Two conductor opening sizes are available. Specify quantity (one per circuit breaker) when ordering.

Conductor Opening Diameter (Inches)	CATALOG NUMBERS
0.25 (6.35 mm)	TEC1
0.41 (10.41 mm)	TEC2

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. Interphase barriers are listed per UL File E7819. (Field installation only.)

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

CATALOG NUMBER
IPB1 (Package of 2 barriers)

Series C F-Frame Termination Accessories

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June 1994

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GENERAL INFORMATION

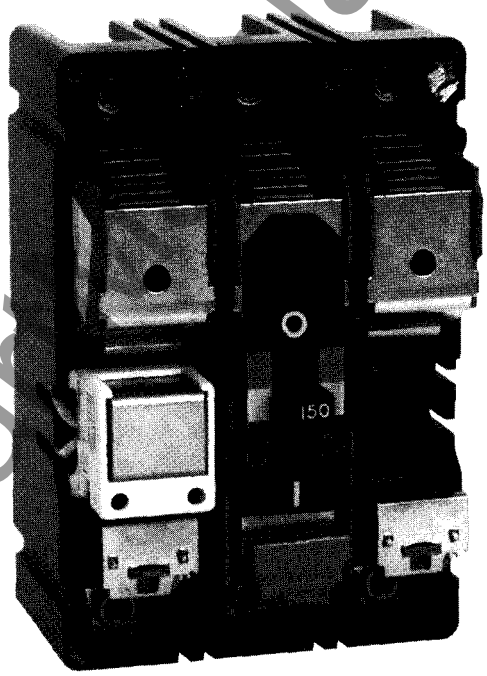
All internal accessories are of the plug-in type and are listed for field installation under UL File E64983.① Internal accessories for sealed circuit breakers are listed under UL File E7819 for factory installation only. The available plug-in accessories include the following:

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

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 rear 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.

Cover design permits field installation of external accessories such as key interlocks, padlockable handle lock hasp, and electrical or manual handle operations without modifying the cover.

To identify allowable accessory installation combinations, see page 12.



Typical Internal Plug-In Accessory Installed in F-Frame Circuit Breaker

① Some UL listings pending; refer to Cutler-Hammer.

Series C F-Frame Accessories

ALLOWABLE ACCESSORY COMBINATIONS

Only 1 Internal Accessory Per Pole Maximum

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

	Reference	1-Pole	2-Pole		3-Pole			4-Pole			
Termination Accessories	Page	Ctr.	Lt.	Rt.	Lt.	Ctr.	Rt.	Lt.	Ctr.	Rt.	Neu.
Line and Load Terminals	7	●	●			●			●		
Keeper Nut	8	●	●			●			●		
Control Wire Terminal Kit	8	●	●			●			●		
Base Mounting Hardware	8	●	●			●			●		
Terminal Shields	9	●	●			●			●		
Terminal End Covers	9					●					
Interphase Barriers	9		●			●			●		
Internal Accessories											
Alarm Lockout Switch (Make Only)	13	■									
Alarm Lockout (Make/Break)	13			■	❑		❑	■			
Alarm Lockout (2Make/2Break)	13			■	❑		❑	■			
Auxiliary Switch (1A, 1B)	14			■	■		■	■			■
Auxiliary Switch (2A, 2B)	14			■	■		■	■			■
Auxiliary Switch/Alarm Lockout	14			■	❑		❑	■			
Shunt Trip–Standard	15			■	■		■	■			■
Shunt Trip–Low Energy	16			■	■		■	■			
Undervoltage Release Mechanism	17			■	■		■	■			
External Accessories											
Non-Padlockable Handle Block	19	■	■			■			■		
Snap On Padlockable Handle Lock Hasp	19	■	■			■			■		
Padlockable Handle Lock Hasp	19			■	❑		❑	❑		❑	
Cylinder Lock	20				■						
Key Interlock Kit	20			■	❑		❑	❑		❑	
Sliding Bar Interlock–Requires 2 Breakers	20					●					
Walking Beam Interlock–Requires 2 Breakers	21					●			●		
Electrical (Solenoid) Operator	21					●			●		
IQ Energy Sentinel	22		●			●					
LFD Current Limiter	22					●					
Plug-In Adapters	22		●			●			●		
Rear Connecting Studs	23	●	●			●			●		
Panelboard Connecting Straps	23	●	●			●			●		
Handle Mechanism	25-28					●					
Door Hardware/Accessories	27					●			●		
Modifications (Refer to Cutler-Hammer)											
Special Calibration	29	●	●			●			●		
Moisture Fungus Treatment	29	●	●			●			●		
Freeze-Tested Circuit Breakers	29	●	●			●			●		
Marine Application	29	●	●			●			●		

■ Applicable in indicated pole position ● Accessory available/Modification available
❑ May be mounted on left or right pole – not both

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Printed in U.S.A.
June 1994

June 1994
Supersedes Frame Book 29-101, pages 1-32,
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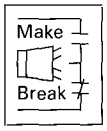
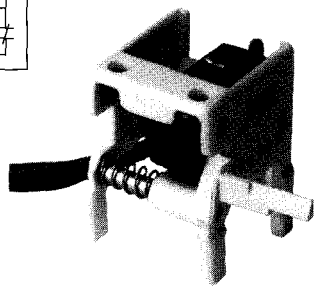
Series C® F-Frame Internal Accessories

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 (single-pole double-throw) switches housed in a plug-in module. 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. For 1-pole circuit breakers, the switch (factory installed only) is mounted on the inside of the cover and the two make leads are routed through an opening in the load end of the circuit breaker.

Electrical Rating Data ● ②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
Multi-Pole Circuit Breakers			
600	50/60 Hz	6	2500
125	dc	0.5 ③	2200
250	dc	0.25 ③	2200
Single-Pole Circuit Breakers			
125/250	50/60 Hz	6 ③	2000
28	dc	3 ③	2000
28	dc	5 ④	2000

Ordering Information

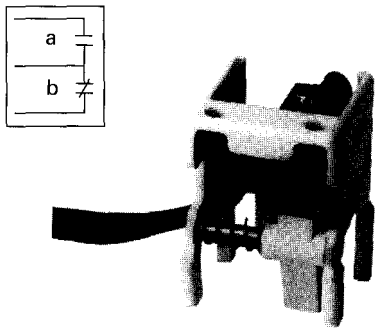
Alarm (Signal)/Lockout Switch

Number of Contacts (Make and Break)	Mounting Location (Pole)	**Factory Mounted**				**Field Mounted**	
		Connection Type and Location				Field Installation Kits ⑤	
		18-Inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear ●	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left ⑦ Right	A1L1LA A1L1RA	A1L1LB A1L1RB	A1L1LC A1L1RC	A1L1LT A1L1RT	A1L1LPK A1L1RPK	A1L1LTK A1L1RTK
2	Left ⑦ Right	A2L1LA A2L1RA	A2L1LB A2L1RB	....	A2L1LT A2L1RT	A2L1LPK A2L1RPK	A2L1LTK A2L1RTK
1 (Make Only)	Single Pole	A1L1CA⑤	.....	.....	.....	.....	.....

① Endurance: 6000 electrical operations plus 4000 mechanical operations.
② Pigtail wire size: No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Inductive (L/R = 0.026).
⑤ Not listed with Underwriters Laboratories, Inc., for field installation.
⑥ Standard pigtail lead exit location.
⑦ Standard mounting location.
⑧ Leads exit load end of circuit breaker. Factory installation only.

Series C F-Frame Internal Accessories

AUXILIARY SWITCH



The auxiliary switch provides circuit breaker contact status information by monitoring the position of the molded cross bar which contains the moving contact arms. The auxiliary switch is used for remote indication and interlock system verification, and consists of one or two SPDT switches housed in a plug-in module. 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.

Electrical Rating Data ① ②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
125 ③	50/60 Hz	1	2500
600	50/60 Hz	6	2500
125	dc	0.5 ④	2200
250	dc	0.25 ④	2200

Ordering Information

Auxiliary Switch

Number of Contacts a and b	Mounting Location (Pole)	Factory Mounted				Field Mounted	
		Connection Type and Location				Field Installation Kits ⑤	
		18-Inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear ●	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left ②	A1X1LA	A1X1LB	A1X1LC	A1X1LT	A1X1PK	A1X1LTK
		E1X1LA ⑦	E1X1LB ⑦	E1X1LC ⑦	.....	E1X1PK	.....
	Right or Neutral	A1X1RA	A1X1RB	A1X1RC	A1X1RT	A1X1PK	A1X1RTK
		E1X1RA ●	E1X1RB ⑦	E1X1RC ⑦	.....	.....	.....
2	Left ②	A2X1LA	A2X1LB	.....	A2X1LT	A2X1LPK	A2X1LTK
		E2X1LA ⑦	E2X1LB ⑦	.....	.....	E2X1LPK	.....
	Right or Neutral	A2X1RA	A2X1RB	.....	A2X1RT	A2X1RPK	A2X1RTK
		E2X1RA ⑦	E2X1RB ⑦	.....	.....	E2X1RPK	.....

Auxiliary Switch and Alarm (Signal)/Lockout Switch Combination

Mounting Location (Pole)	Factory Mounted			Field Mounted	
	Connection Type and Location			Field Installation Kits ⑤	
	18-Inch Pigtail Leads		Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear ●	Same Side		
	CATALOG NUMBERS			CATALOG NUMBERS	
Left Right	AAL1LA AAL1RA	AAL1LB AAL1RB	AAL1LT AAL1RT	AAL1LPK AAL1RPK	AAL1LTK AAL1RTK

① Endurance: 6000 electrical operations plus 4000 mechanical operations.
② Pigtail wire size: No. 18 AWG (0,82 mm²).
③ For use in electronic circuit of 100 micro-amps and 15 Vdc minimum.
④ Non-inductive load.
⑤ Not listed with Underwriters Laboratories, Inc., for field installation.
● Standard pigtail lead exit location.
⑦ 125-volt (Max.), 50/60 Hz switch for use in electronic circuit of 100 micro-amp and 15 Vdc minimum.

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Printed in U.S.A.
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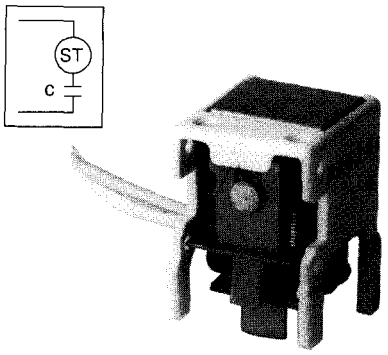
Series C® F-Frame Internal Accessories

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 mounted in a plug-in module. The 120 Vac shunt trip is marked, "suitable for use with ground fault protection devices."

Electrical Rating Data① ② ③

50/60 Hz			Dc		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	6.75	75	12	9	400
24		300	24		
48	36	92	48	36	100
60		140	60		160
110		480			
120		570			
127		640			
208	156	180	110	165	55
220		200	120		66
240		240	125		71
380		610	127		72
415	300	130	220	. . .	110
440		330	250	. . .	140
480		380	. . .	. . .	. . .
525		450	. . .	. . .	. . .
550		530	. . .	. . .	. . .
600		590	. . .	. . .	. . .
		700	. . .	. . .	. . .

Ordering Information

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. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

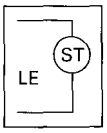
Shunt Trip

Voltage Rating (Ac Freq = 50/60 Hz)	Factory Mounted				Field Mounted	
	Connection Type and Location				Field Installation Kits ④	
	18-Inch Pigtail Leads ⑤			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear ●	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left-Pole Mounting Ac/Dc Ratings●						
12-24 Vac or Vdc	SNT1LA03	SNT1LB03	SNT1LC03	SNT1LT03	SNT1LP03K	SNT1LT03K
48-127 Vac or 48-60 Vdc ⑧	SNT1LA08	SNT1LB08	SNT1LC08	SNT1LT08	SNT1LP08K	SNT1LT08K
208-380 Vac or 110-127 Vdc	SNT1LA12	SNT1LB12	SNT1LC12	SNT1LT12	SNT1LP12K	SNT1LT12K
415-600 Vac or 220-250 Vdc	SNT1LA18	SNT1LB18	SNT1LC18	SNT1LT18	SNT1LP18K	SNT1LT18K
Right- or Neutral-Pole Mounting Ac/Dc Ratings						
9-24 Vac or Vdc	SNT1RA03	SNT1RB03	SNT1RC03	SNT1RT03	SNT1RP03K	SNT1RT03K
48-127 Vac or 48-60 Vdc ⑧	SNT1RA08	SNT1RB08	SNT1RC08	SNT1RT08	SNT1RP08K	SNT1RT08K
208-380 Vac or 110-127 Vdc	SNT1RA12	SNT1RB12	SNT1RC12	SNT1RT12	SNT1RP12K	SNT1RT12K
415-600 Vac or 220-250 Vdc	SNT1RA18	SNT1RB18	SNT1RC18	SNT1RT18	SNT1RP18K	SNT1RT18K

① Average unlatching time: 6 milliseconds.
② Average circuit breaker contact total opening time: 18 milliseconds.
③ Endurance: 6000 electrical operations plus 4000 mechanical operations.
④ Not listed with Underwriters Laboratories, Inc., for field installation.
⑤ Pigtail wire size: No. 18 AWG (0.82 mm²).
⑥ Standard pigtail lead exit location.
⑦ Standard mounting location.
⑧ 120 Vac marked suitable for ground fault protection devices.

Series C F-Frame Internal Accessories

LOW ENERGY SHUNT TRIP



A low energy shunt trip (LEST) device, rated 24 Vdc, is available for special applications. The LEST is designed to trip the circuit breaker when a 100 microfarad capacitor is discharged through the LEST. A cut-off switch must be included in the external circuit.

Ordering Information
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. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Low Energy Shunt Trip ①

Mounting Positions	Factory Mounted				Field Mounted	
	Connection Type and Location				Field Installation Kits ②	
	18-Inch Pigtail Leads ③			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear ④	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole Right Pole	LST1LA LST1RA	LST1LB LST1RB	LST1LC LST1RC	LST1LT LST1RT	LST1LPK LST1RPK	LST1LTK LST1RTK

① Cutoff provisions required in control circuit.
② Not listed with Underwriters Laboratories, Inc., for field installation.
③ Pigtail wire size: No. 18 AWG (0.82 mm²).
④ Standard pigtail lead exit location.
⑤ Standard mounting location.

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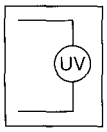
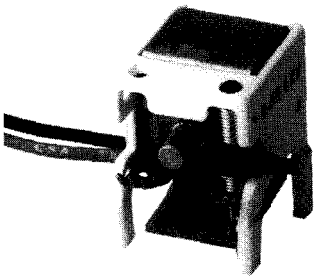
UNDERVOLTAGE RELEASE MECHANISM





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.

The undervoltage release mechanism consists of a continuous rated solenoid with a plunger and tripping lever mounted in 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 (or OFF) position. With less than pickup voltage applied to the undervoltage release mechanism, the circuit breaker contacts will not touch when a closing operation is attempted.

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

Electrical Rating Data ①

50/60 Hz					Dc				
Supply Voltage	Dropout Voltage		Pickup Voltage	VA	Supply Voltage	Dropout Voltage		Pickup Voltage	VA
	Min.	Max.	Max.			Min.	Max.	Max.	
12	4.2	6.3	7.6	1.3 2.5	12	4.2	8.4	10.2	2.8
24	8.4	16.8	20.4	1.4	24	8.4	16.8	20.4	1.6
48 60	21	33.6	40.8	1.2 1.9	48 60	21	33.6	40.8	1.3 2.0
110 120 127	44.5	77	93.5	1.3 1.5 1.7	110 120 125	44.5	77	93.5	1.5 1.7 1.9
208 220 240	84	145.6	176.8	2.2 2.4 2.9	220 250 . . .	87.5 . . .	154 . . .	187 . . .	2.6 3.4 . . .
380 415 440 480	168	266	323	2.9 3.5 3.9 4.6	. . . .	. . . .	. . . .	. . . .	. . . .
525 550 600	210	367	446	4.3 4.8 5.8	. . . .	. . . .	. . . .	. . . .	. . . .

① Endurance: 6000 electrical operations plus 4000 mechanical operations.

Series C F-Frame Internal Accessories

Ordering Information
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. Electrical ratings are shown on applicable circuit breaker accessory nameplates.

Undervoltage Release Mechanism

Voltage Rating (Ac Freq = 50/60 Hz)	Factory Mounted				Field Mounted	
	Connection Type and Location				Field Installation Kits ①	
	18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear ②	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left-Pole Mounting Ac Ratings ③						
12 Vac	UVH1LA02	UVH1LB02	UVH1LC02	UVH1LT02	UVH1LP02K	UVH1LT02K
24 Vac	UVH1LA03	UVH1LB03	UVH1LC03	UVH1LT03	UVH1LP03K	UVH1LT03K
48-60 Vac	UVH1LA05	UVH1LB05	UVH1LC05	UVH1LT05	UVH1LP05K	UVH1LT05K
110-127 Vac	UVH1LA08	UVH1LB08	UVH1LC08	UVH1LT08	UVH1LP08K	UVH1LT08K
208-240 Vac	UVH1LA11	UVH1LB11	UVH1LC11	UVH1LT11	UVH1LP11K	UVH1LT11K
380-480 Vac	UVH1LA15	UVH1LB15	UVH1LC15	UVH1LT15	UVH1LP15K	UVH1LT15K
525-600 Vac	UVH1LA18	UVH1LB18	UVH1LC18	UVH1LT18	UVH1LP18K	UVH1LT18K
Right-Pole Mounting Ac Ratings						
12 Vac	UVH1RA02	UVH1RB02	UVH1RC02	UVH1RT02	UVH1RP02K	UVH1RT02K
24 Vac	UVH1RA03	UVH1RB03	UVH1RC03	UVH1RT03	UVH1RP03K	UVH1RT03K
48-60 Vac	UVH1RA05	UVH1RB05	UVH1RC05	UVH1RT05	UVH1RP05K	UVH1RT05K
110-127 Vac	UVH1RA08	UVH1RB08	UVH1RC08	UVH1RT08	UVH1RP08K	UVH1RT08K
208-240 Vac	UVH1RA11	UVH1RB11	UVH1RC11	UVH1RT11	UVH1RP11K	UVH1RT11K
380-480 Vac	UVH1RA15	UVH1RB15	UVH1RC15	UVH1RT15	UVH1RP15K	UVH1RT15K
525-600 Vac	UVH1RA18	UVH1RB18	UVH1RC18	UVH1RT18	UVH1RP18K	UVH1RT18K
Left-Pole Mounting Dc Ratings ③						
12 Vdc	UVH1LA20	UVH1LB20	UVH1LC20	UVH1LT20	UVH1LP20K	UVH1LT20K
24 Vdc	UVH1LA21	UVH1LB21	UVH1LC21	UVH1LT21	UVH1LP21K	UVH1LT21K
48-60 Vdc	UVH1LA23	UVH1LB23	UVH1LC23	UVH1LT23	UVH1LP23K	UVH1LT23K
110-127 Vdc	UVH1LA26	UVH1LB26	UVH1LC26	UVH1LT26	UVH1LP26K	UVH1LT26K
220-250 Vdc	UVH1LA28	UVH1LB28	UVH1LC28	UVH1LT28	UVH1LP28K	UVH1LT28K
Right-Pole Mounting Dc Ratings						
12 Vdc	UVH1RA20	UVH1RB20	UVH1RC20	UVH1RT20	UVH1RP20K	UVH1RT20K
24 Vdc	UVH1RA21	UVH1RB21	UVH1RC21	UVH1RT21	UVH1RP21K	UVH1RT21K
48-60 Vdc	UVH1RA23	UVH1RB23	UVH1RC23	UVH1RT23	UVH1RP23K	UVH1RT23K
110-127 Vdc	UVH1RA26	UVH1RB26	UVH1RC26	UVH1RT26	UVH1RP26K	UVH1RT26K
220-250 Vdc	UVH1RA28	UVH1RB28	UVH1RC28	UVH1RT28	UVH1RP28K	UVH1RT28K

① Not listed with Underwriters Laboratories, Inc., for field installation.
② Standard pigtail lead exit location.
③ Standard mounting location.

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Printed in U.S.A.
June 1994

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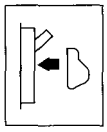
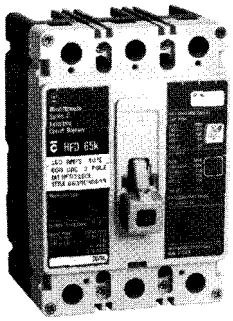
June 1994
Supersedes Frame Book 29-101, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® F-Frame External Accessories

NON-PADLOCKABLE HANDLE BLOCK



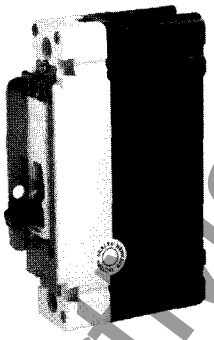


The nonlockable handle block secures the circuit breaker handle in either the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle block holds the circuit breaker handle in the ON position.) The device is positioned over the circuit breaker handle and secured by a setscrew to deter accidental operation of the circuit breaker handle. Listed per UL File E7819. (Field installation only.)

Ordering Information

CATALOG NUMBER
LKD1

SNAP ON PADLOCKABLE HANDLE LOCK HASP

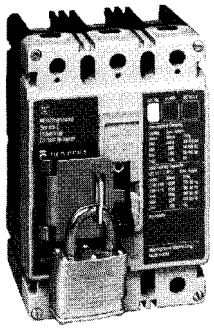


The snap on padlockable handle lock allows the handle to be locked in the OFF or ON position. (Trip-free operation allows the circuit breaker to trip when the handle lock holds the circuit breaker handle in the ON position.) This device was designed for use on the 1-pole circuit breaker, but may be used on 1-, 2-, 3-, and 4-pole styles. The handle lock snaps onto the escutcheon area of the handle with an optional retaining screw for added secureness. The handle lock will accommodate one padlock with a ¼ inch (6 mm) shackle. Listed per UL File E7819. (Field installation only.)

Ordering Information

CATALOG NUMBER
PHL1

PADLOCKABLE HANDLE LOCK HASP



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 ¼ inch (6 mm) shackles. Listed per UL File E7819. (Field installation only.)

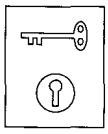
The padlockable handle lock can be mounted on either side of the operating handle. One per circuit breaker. (Field installation only.)

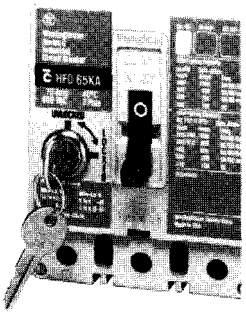
Ordering Information

CATALOG NUMBER	
2-, 3-, 4-pole breakers	PLK1

Series C F-Frame External Accessories

CYLINDER LOCK





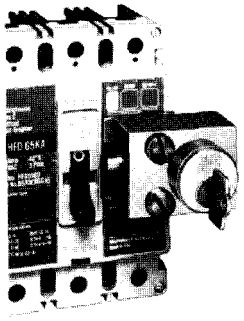
The cylinder lock internally blocks the trip bar in the tripped position to prevent the circuit breaker from being switched to ON. The cylinder lock is factory installed in the circuit breaker cover. Other internally mounted accessories cannot be installed in the same pole as the cylinder lock. (Factory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

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.

Ordering Information

CATALOG NUMBER
Order by description

KEY INTERLOCK KIT (Lock Not Included)



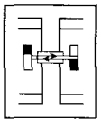
The key interlock is used to externally lock the circuit breaker handle in the OFF position. When the key interlock is locked, an extended deadbolt blocks movement of the circuit breaker handle. Uniquely coded keys are removable only with the deadbolt extended. Each coded key controls a group of circuit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

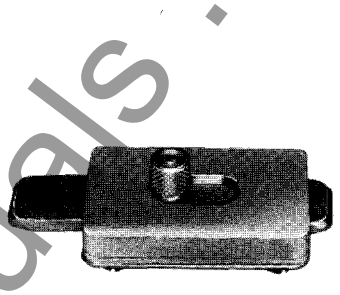
The key interlock assembly is Underwriters Laboratories, Inc., listed for field installation under UL file E7819 and consists of a mounting kit and a purchaser supplied deadbolt lock. The mounting kit comprises a mounting plate, which is secured to the circuit breaker cover in either the left- or right-pole position, key interlock mounting screws, and a wire seal. Specific mounting kits are required for individual key interlock types.

Ordering Information
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 Kirk Square D Federal Pioneer	B-4003-1 F SF VF	3/8 inch 3/8 inch None 3/8 inch	KYK1
Castell	K or QK	3/8 inch	CTK1

SLIDING BAR INTERLOCK





The sliding bar interlock provides mechanical interlocking between two adjacent 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.)

Ordering Information
The sliding bar interlock is available for mounting between two adjacent 3-pole circuit breakers with circuit breakers centerline spacing at 4 3/16 inches and enclosure front panel thickness of 1/8 or 3/16 inch. (For field installation only.)

CATALOG NUMBER
SBK1

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Printed in U.S.A.

June 1994

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June 1994
Supersedes Frame Book 29-101, pages 1-32,
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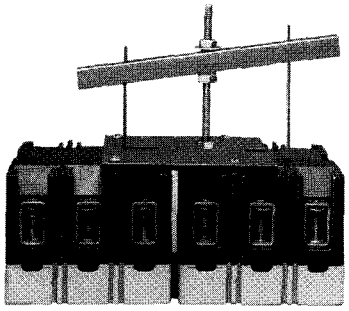
31-500A

Series C® F-Frame External Accessories

WALKING BEAM INTERLOCK



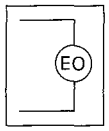
The walking beam interlock provides mechanical interlocking between two adjacent circuit breakers of the same pole configuration. The walking beam interlock mounts on a bracket behind and between the circuit breakers. A plunger on each end of the beam is inserted through an access hole in the back plate and base of each circuit breaker. The walking beam interlock prevents both circuit breakers from being switched ON at the same time. If 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.

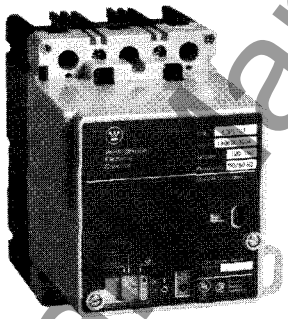
Ordering Information
The walking beam interlock is available for mounting between two adjacent circuit breakers spaced ¼ inch apart and having the same pole configuration. The two circuit breakers must be factory modified to accept the walking beam interlock assembly (suitable for use with either 2-, 3-, or 4-pole circuit breakers). With properly modified circuit breakers, the walking beam interlock is suitable for field installation. Order circuit breakers of the type and rating required modified for field installation of the walking beam interlock.

CATALOG NUMBER
WBL1

① Electrical operator is also suitable for use with F-frame circuit breakers.
② The electrical operator design is endurance tested for 10,000 electrical operations.
③ Use current-limiting type fuse where required.
④ Tolerance: +10%, −15% of nominal voltage.
● Tolerance: ±10% of nominal voltage.

ELECTRICAL (SOLENOID) OPERATOR





The electrical (solenoid) operator ① is a single solenoid mechanism that enables local and remote circuit breaker ON, OFF, and reset switching. The electrical operator is mounted on the circuit breaker cover within the trimline of the circuit breaker. The electrical operator uses a unique bistable latch that allows the device to operate using one solenoid. 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 includes provisions for padlocking the circuit breaker handle in the OFF position. The slide will accept three padlock shackles with a maximum diameter of ¼ inch (6 mm) each. An interlock electrically disconnects the solenoid when the electrical operator cover is removed. The above table provides electrical rating data for the electrical (solenoid) operator.

The electrical (solenoid) operator is Underwriters Laboratories, Inc., listed as a circuit breaker accessory under UL File E64983.

Electrical Rating Data ②

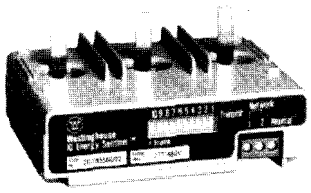
Voltage	Freq.	Inrush Current Amps	Maximum Operating Time	Fuse ③ Amps
120 ④	50/60	10	5 cycles	3
240 ④	Hz Ac	5	(80 ms)	2
120 ⑤	Dc	14	5 cycles	3-5
240 ⑤	Dc	8	(80 ms)	2-3

Ordering Information

Voltage	Freq.	Terminal Block	18-Inch Pigtail Lead
		CATALOG NUMBERS	
120	Ac	EOP1T07	EOP1P07
240		EOP1T11	EOP1P11
120	Dc	EOP1T07DC	EOP1P07DC
240		EOP1T11DC	EOP1P11DC

Series C F-Frame External Accessories

IQ ENERGY SENTINEL

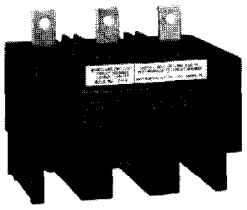


The IQ Energy Sentinel is a highly accurate, microprocessor-based, breaker-mounted device designed to monitor power and energy readings. It represents an alternative to watt meters, watt-hour meters, and watt demand meters. Key advantages include savings in space, lower installation costs, and remote monitoring capability.

The IQ Energy Sentinel mounts on the load side of a Westinghouse Series C F-frame (150 Amp) circuit breaker. It can be applied on three-phase, four-wire systems, or single-phase, three-wire systems with voltage connected through phases A and C.

For more information see Descriptive Bulletin 8178.

LFD CURRENT LIMITER

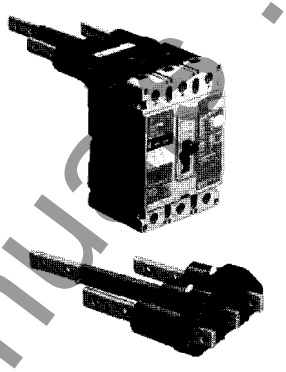


The LFD current limiter is an accessory that bolts to the load end of a standard FDB or FD thermal-magnetic circuit breaker, providing 200,000A interrupting capacity at up to 600 Vac. LFD current limiters for thermal-magnetic circuit breakers are listed with Underwriters Laboratories, Inc., under File E47239.

Ordering Information

Circuit Breaker Rating Amps ①	CATALOG NUMBERS
15-70	LFD3070R
80-160	LFD3150R

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 100A or 150/160A. Plug-in adapters are component recognized through 150A per UL File E56845. (Field installation only.)

Ordering Information

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 installations only.)

Continuous Current Rating (Amperes)	2-Pole	3-Pole	4-Pole
	STYLE NUMBERS		
100	507C036G13	507C036G15	179C968G03
150/160	507C036G14	507C036G16	179C968G04
Mounting Plate	176C511H01	507C047H01	②

● Ratings through 70A can be supplied with terminals for Cu cable only (#14-#2). Order by description.
② Refer to Cutler-Hammer for availability.

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Printed in U.S.A.
June 1994

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June 1994
Supersedes Frame Book 29-101, pages 1-32,
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Mailed to: E, D, C/29-100A, 31-400A,
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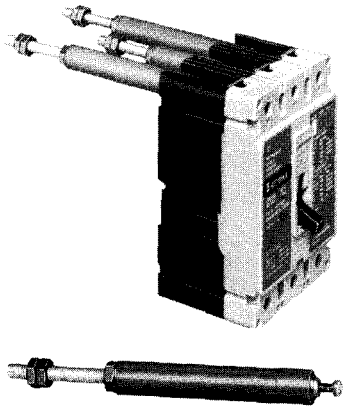
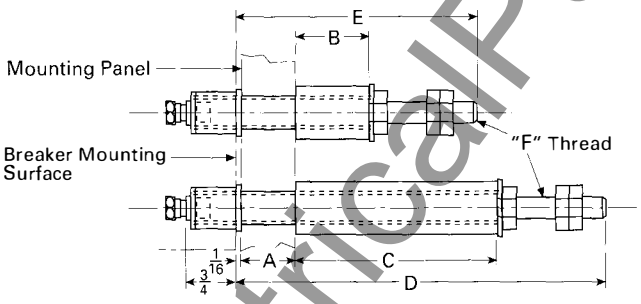
Series C® F-Frame External Accessories

REAR CONNECTING STUDS



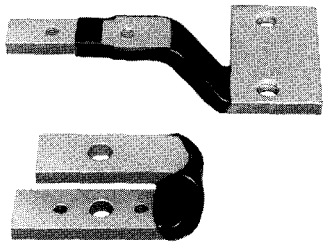
Rear connecting studs are available in several sizes to accommodate specific fixed-mounted circuit breaker applications. The rear connecting studs are rated 100A or 150A.

Ordering Information
Each rear connecting stud assembly consists of one stud and one tube. Select alternate long and short stud assemblies for circuit breakers with more than one pole to maintain proper clearances between poles. One assembly is required for line-end and one for load-end of each pole. Tubes must be ordered separately. Connecting studs are available only with imperial thread sizes.



Stud Ampere Rating	STUD STYLE NUMBER	Panel Thickness (Inches) A	Tube Length (Inches) B	C	TUBE STYLE NUMBER	Dimensions (Inches) D	E	F
For 15A to 100A Circuit Breakers								
100A Short	451D874G01	1	1 1/16	....	32B9446H20	....	3 5/8	5/16 - 18
100A Short	451D874G01	1 1/16 to 1 5/16	1 3/8	....	32B9446H21	....		
100A Short	451D874G01	3/8 to 5/8	1 11/16	....	32B9446H22	....		
100A Short	451D874G01	1/4 to 5/16	2	....	32B9446H23	....		
100A Long	451D874G02	1	....	3 7/16	32B9446H24	6 1/8	....	
100A Long	451D874G02	1 1/16 to 1 5/16	....	3 3/4	32B9446H25		....	
100A Long	451D874G02	3/8 to 5/8	....	4 1/16	32B9446H26		....	
100A Long	451D874G02	1/4 to 5/16	....	4 3/8	32B9446H27		....	
For 110A to 150A Circuit Breakers								
150A Short	374D883G01	1	1 1/16	....	374D883H06	....	4 1/4	7/16 - 14
150A Short	374D883G01	1 1/16 to 1 5/16	1 3/8	....	374D883H07	....		
150A Short	374D883G01	3/8 to 5/8	1 11/16	....	374D883H08	....		
150A Short	374D883G01	1/4 to 5/16	2	....	374D883H09	....		
150A Long	374D883G02	1	....	3 7/16	374D883H10	7 1/2	....	
150A Long	374D883G02	1 1/16 to 1 5/16	....	3 3/4	374D883H11		....	
150A Long	374D883G02	3/8 to 5/8	....	4 1/16	374D883H12		....	
150A Long	374D883G02	1/4 to 5/16	....	4 3/8	374D883H13		....	

PANELBOARD CONNECTING STRAPS



Panelboard connecting straps are used to connect the circuit breaker terminals to the panelboard bus. The panelboard connecting straps are available in two types with 50A, 100A, and 150 ratings: outside pole and center pole.

The panelboard connecting strips are available in two sizes to meet the needs of most standard panelboard applications. The panelboard connecting straps are listed by panelboard bus spacing. Style numbers for special mounting brackets for CDP panelboard installations are also included.

Ordering Information
Refer to panelboard manufacturer for compatibility.

Panelboard Connecting Straps

Bus Spacing (Inches)	Continuous Current Rating (Amperes)	Pole Connector Type	
		Center	Outside
		STYLE NUMBERS	
5¾-Inch Deep Box, 600 Vac Max			
2¾	50	673B142G02	673B142G09
2¾	100	673B142G02	673B142G10
2¾	150	673B142G04	673B142G03
3½	50	1253C72G01	1253C72G03
3½	100	1253C73G03	1253C73G06
3½	150	1253C73G01	1253C73G05

Mounting Bracket

STYLE NUMBERS	
2-Pole	3-Pole
624B600H02	624B600H01

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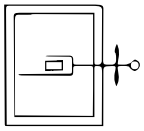
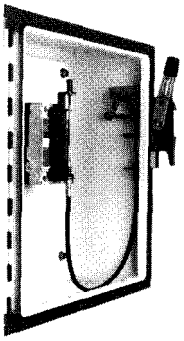
FLEX SHAFT™ HANDLE MECHANISM





The Flex Shaft type handle mechanism is an extra heavy-duty handle mechanism designed for mounting in flange-type enclosures. An operating handle, flexible shaft, and mechanism are required for standard application.

The handle can be locked in the RESET position with up to three padlocks. The handle is suitable for NEMA 1, 3R, 4, 4X, and 12 fabricated enclosures. It is supplied for mounting in right hand flange enclosures. The handle fits the industry standard cutout.

Eight lengths of shafts are available for use with the wide range of depths of various enclosures (3 feet through 10 feet). These choices enable this mechanism to be mounted in various depth, width, and height enclosures. Note: when selecting the length of shaft, ensure minimum bending radius of 4 inches is maintained to operate properly.

The standard method of shipment includes the mechanism preset at the factory; however, minor field adjustments may be required.

For this publication, the term Circuit Breaker shall also include the molded case switch and Series C motor circuit protector (HMCP).

Ordering Information
Catalog Number includes complete assembly consisting of handle, flexible shaft, operating mechanism, and door interlock hardware to fit industry standard flange cutout.

Circuit Breaker	Length of Flex Shaft (in feet)	CATALOG NUMBERS
F-Frame	3	F1S03
	4	F1S04
	5	F1S05
	6	F1S06
	7	F1S07
	8	F1S08
	9	F1S09
	10	F1S10

Note: NEMA 4/4X handle mechanisms are available. Add suffix X to complete catalog number.

Accessories

Standard Door Hardware
(Required Adapter Kit Below)

CATALOG NUMBERS	Latch	Panel Height
DH1R	2 point	Up to 30 in.
DH2R	2 point	Up to 40 in.
DH3R	3 point	Over 40 in.

Refer to page 27 for more information.

Door Hardware Adapter Kit
(Required on Standard Door Hardware)

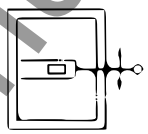
CATALOG NUMBER
AMTDHA

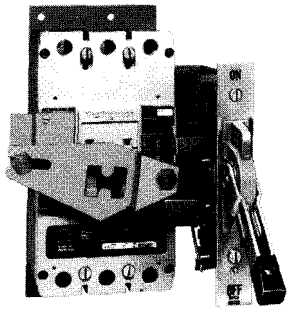
Refer to page 27 for more information.

Door Hardware for Hoffman A – 25 Enclosure
Kit consists of special door hardware and door interlock pin. Available for right-hand flange mounting only.

CATALOG NUMBERS	Latch	Panel Height
HDH-2R	2 point	Up to 40 in.
HDH-3R	3 point	Over 40 in.

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 application is also available. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of $^{3}/_{8}$ inch (9.52mm).

Ordering information
Right-Hand Mounting Enclosure Cover

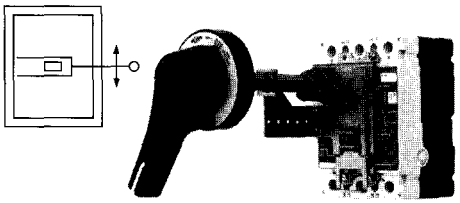
CATALOG NUMBER	
Hinged on Left	SM150R

Left-Hand Mounting Enclosure Cover

CATALOG NUMBER	
Hinged on Right	SM150L

Series C F-Frame External Accessories

SERIES C ROTARY HANDLE MECHANISM



The Westinghouse general purpose Rotary handle mechanisms are suitable for use with NEMA 1, 3R, 4, and 12 fabricated enclosures. They are designed for use with Series C F-Frame Circuit Breakers, Molded Case Switches, and Motor Circuit Protectors (HMCP).

Required for a standard application are the operating handle, shaft, and mechanism.

The operating handle has been designed to meet NFPA 79 requirements. It may be mounted in either the horizontal or the vertical direction. The handle was ergonomically designed with extra clearance for a "gloved hand" to operate. It may be padlocked in the OFF position utilizing 3 padlocks.

The standard label on the operating handle indicates ON/Tripped/OFF/Reset.

Ordering Information

Breaker Frame	Shaft Length (inches)	COMPLETE CATALOG NUMBER●	SEPARATE STYLE NUMBERS		
			Standard Handle②③	Breaker④ Mechanism	Shaft⑤
F	6	HM1R06	6648C22G01	6648C23G01	4217B37G04
	12	HM1R12	6648C22G01	6648C23G01	4217B37G01
	16	HM1R16	6648C22G01	6648C23G01	4217B37G02
	24	HM1R24	6648C22G01	6648C23G01	4217B37G03

Note: NEMA 4 handle mechanisms are available. Add suffix X to complete catalog number.

To meet the various enclosure depths, four variable depth shafts are offered (6 inch, 12 inch, 16 inch, and 24 inch). Each shaft includes a support brace to ensure proper alignment. In addition, the 16 inch and 24 inch extra long shafts include an adjustable support bracket.

The standard mechanism located on the breaker does include means for internally locking the breaker in the "OFF" position with up to 3 padlocks each with a maximum diameter of .312 inch.

NEMA 4/4X handles are similar to standard handles except they include an internal neoprene gasket. Due to gasketing effect between the handle and the housing, the handle may not indicate a tripped position.

Accessories

As an option, an auxiliary switch is offered so that the control panel builder may electrically indicate the status of the breaker. This accessory would be mounted on the mechanism and comes with 24-inch pigtail leads.

Microswitch
(Includes 24-inch Pigtail leads)

STYLE NUMBER
5108A61G01

① Complete catalog number includes the standard handle, mechanism, shaft, and support brace/bracket.
② Handle is designed suitable for NEMA 1, 3R, and 12 enclosures.
③ The standard handle label indicates ON/Tripped/OFF/Reset.
④ Breaker mechanism includes a shaft support bracket and its parts.
⑤ Longer shafts (16 in. and 24 in.) include an adjustable support extension.

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June 1994
Supersedes Frame Book 29-101, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

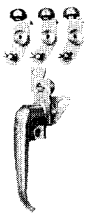
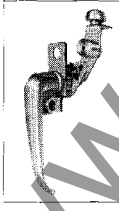
Series C® F-Frame External Accessories

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.

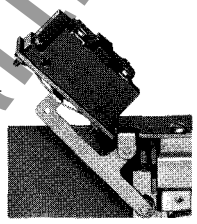
Hardware Item	Description and Catalog Numbers
	With sliding latches for smaller panels up to approx. 30" high. CATALOG NUMBERS Right Hand: DH1R Left Hand: DH1L
	With 2-roller latches for intermediate panels up to approx. 40" high. CATALOG NUMBERS Right Hand: DH2R Left Hand: DH2L
	With 3-roller latches 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 hinge 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

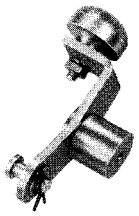


Electrical Interlock Kit: Provides 1 N.C. and 1 N.O. contacts (SPDT switch) for use with auxiliary circuits. Mounts to end of mechanism housing as shown.

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

STYLE NUMBER	
Right- or Left-Hand Mounting	656D669G01

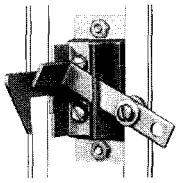
For Door Hardware Using Roller Latches

STYLE NUMBERS	
Right-Hand Mounting	370D801G04
Left-Hand Mounting	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

Door Hardware Kit

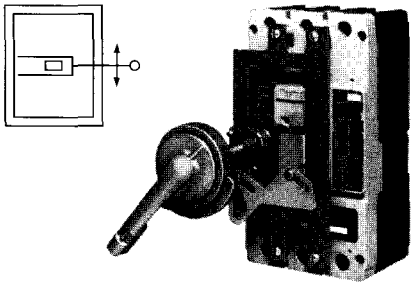


This adapter kit is for use with door hardware kits DH1R, DH2R, or DH3R for type SM handle mechanisms to permit the use and interlocking of right-hand installation of the type AMT handle mechanism (Below-the-Handle or Above-the-Handle type).

CATALOG NUMBER
AMTDHA

Series C F-Frame External Accessories

VARI-DEPTH HANDLE MECHANISM ①



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 $^{5}/_{16}$ inch (7.94 mm).

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.

STYLE NUMBER	
Standard Finish	504C323G04

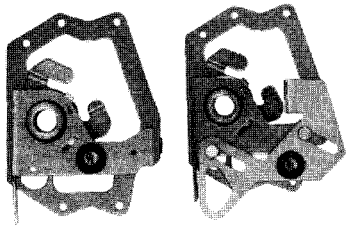
Handle Kits: These kits are for use with NEMA 4, 7, and 9 cast enclosures. The kits include a special operating handle, mounting bolts, and an adapter bushing. (The bushing may be purchased separately.) Kits may be used with standard mechanisms and shafts as required.

STYLE NUMBER	
NEMA 4 and 9 Kit	314C794G10

STYLE NUMBER	
NEMA 7 Kit	314C794G09

STYLE NUMBER	
Adapter Bushing Only	314C794G04

Ordering Information ●

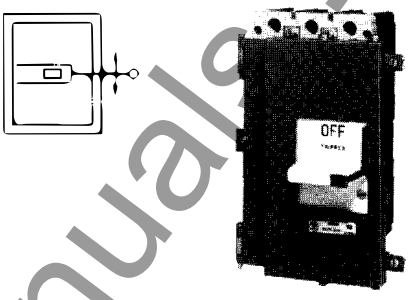


Mechanisms③④		Handle	Shaft			
Standard – (No Internal Lockoff)	Special – (With Internal Lockoff)	NEMA 1, 3R, 12 (With Hardware)	Standard		Long	
STYLE NUMBERS			STYLE NUMBER	Panel Depth	STYLE NUMBER	Panel Depth
373D958G22	373D958G23	504C323G03	47A4446G36	5⅞-11⅛	47A4446G37	11⅛-14⅞

Note: Extra long shaft available. Includes support bracket for Series C F-Frame with no internal lockoff. Order 373D958G24, which includes the mech, shaft, and bracket. Order handle separately. Panel Depth 16⅜-24¼.

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 connect studs are used, refer to Westinghouse.
③ Includes hardware.
④ Outline and drilling plan reference: Drawing 653D270.

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 $^{3}/_{8}$ inch (7.92 mm). UL File E56845.

Ordering Information

For use with NEMA 1 Enclosure Catalog

CATALOG NUMBER
SMCU150FD

For use with NEMA 12 Enclosure Catalog

CATALOG NUMBER
CMCU150FD

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Printed in U.S.A.
June 1994

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Westinghouse &
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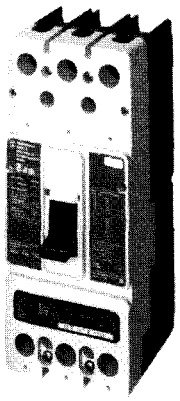
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
Supersedes Frame Book 29-102, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® Molded Case Circuit Breakers J-Frame 70-250 Amperes



Dimensions, Inches (mm)

No. of Poles	Width	Height	Depth
2, 3	4.125 (105)	10 (255)	4.063 (103)
4	5.5 (140)	10 (254)	4.063 (103)

Approximate Shipping Weight, Lbs. (kg)

Breaker Type	Complete Breaker			Frame Only			Trip Unit		
	Number of Poles								
	2	3	4	2	3	4	2	3	4
JDB	11.25 (5.103)	12.5 (5.670)	—	—	—	—	—	—	—
JD	11.25 (5.103)	12.5 (5.670)	12.75 (5.783)	9 (4.082)	10 (4.536)	10.5 (4.763)	2 (.907)	2 (.907)	1.5 (.680)
HJD	11.25 (5.103)	12.5 (5.670)	12.75 (5.783)	9 (4.082)	10 (4.536)	10.5 (4.763)	2 (.907)	2 (.907)	1.5 (.680)
JDC	12.25 (5.557)	13.5 (6.124)	12.75 (5.783)	10 (4.536)	11 (4.990)	10.5 (4.763)	2 (.907)	2 (.907)	1.5 (.680)

INTERRUPTING CAPACITY RATINGS

UL489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes)					
		Volts Ac (50/60Hz)				Volts Dc	
		240	480	600	125	250①②	500③
JDB	2,3	65,000	25,000	18,000	.....	10,000	.....
JD	2,3,4	65,000	25,000	18,000	.....	10,000	.....
HJD	2,3,4	100,000	65,000	25,000	.....	22,000	.....
JDC	2,3,4	200,000	100,000	35,000	.....	22,000	.....
HJDDC	3④	.....	.....	.....	.....	42,000⑤	35,000④

IEC 157-1 (P1) Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes)							
		Volts Ac (50/60Hz)							Volts Dc
		240	380	415	440	500	600	125	250①②
JD	2,3,4	65,000	25,000	25,000	25,000	20,000	.....	.....	10,000
HJD	2,3,4	100,000	65,000	65,000	65,000	42,000	.....	.....	22,000
JDC	2,3,4	200,000	100,000	100,000	100,000	65,000	.....	.....	22,000

① 2-pole circuit breaker or two outside poles of 3-pole circuit breaker.
② Time constant is 3 milliseconds minimum at 10kA and 8 milliseconds minimum at 22kA.
③ 8 milliseconds time constant.
④ 3 poles in series.
⑤ 2 poles in series.

STANDARDS

Series C molded case circuit breakers are designed to conform with the following standards:

- Australian Standard AS 2184, Molded 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, Circuit Breakers
- Japanese T-Mark Standard, 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 Molded Case Circuit Breakers
- Swiss Electro-Technical Association Standard SEV 157-1, Safety Regulations for Circuit Breakers
- Underwriters Laboratories, Inc., Standard UL 489, Molded Case Circuit Breakers and Circuit Breaker Enclosures, Including Marine Circuit Breakers File E7819
- 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 Switchgear and Control Gear, Circuit Breakers

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Series C molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

Series C Molded Case Circuit Breakers, J-Frame, 70-250 Amperes

CATALOG NUMBERING SYSTEMS

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame Catalog Numbers

JD	3	250	F
Circuit Breaker/ Frame Type	Number of Poles	Circuit Breaker/ Frame Ampere Rating	Suffix

JDB	2: 2 Poles	70	C: Non-Aluminim Terminals
JD	3: 3 Poles	90	F: Frame Only
HJD	4: 4 Poles	100	K: High Magnetic Molded Case Switch
JDC		125	V: 50°C Calibration
HJDDC		150	W: Without Terminals
		175	X: Load Side Terminals Only
		200	Y: Line Side Terminals Only
		225	
		250	

Trip Unit Catalog Numbers

JT	3	250	T
Trip Unit Type	Number of Poles	Trip Unit/ Rating Plug Ampere Rating	Suffix

JT:	Thermal-Magnetic	2	70	T: Trip Unit Thermal-Magnetic
		3	90	Fixed Thermal
			100	Adj. Magnetic
			125	V: 50°C Calibration
			150	
			175	
			200	
			225	
			250	

J-frame circuit breakers are available as individual components (Frame, Trip Unit, Terminals), or factory assembled complete breakers.

Further Information

Technical Data	TD 29-160
Dimensions	DS 29-170J
Time/Current Curves	AD 29-167J
Instantaneous Only Circuit Breakers (Motor Circuit Protector)	SD 29-120H

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Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.

June 1994

Cutler-Hammer
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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
Supersedes Frame Book 29-102, pages 1-32,
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31-500A

Series C® Molded Case Circuit Breakers J-Frame 70-250 Amperes

MOLDED CASE SWITCHES

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 UL 1087.

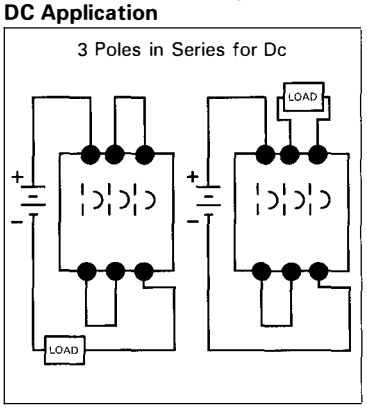
Maximum Continuous Ampere Rating @40°C	**600 Vac Maximum, 250 Vdc**		**Standard Terminals Only**
	Circuit Breaker Only Without Line and Load Terminals		See Page 7 for Optional Terminals
		Suitable for Reverse Feed Use	
	CATALOG NUMBERS		
2-Pole			
250	JD2250WK	JDB2250WK	TA250KB ①
3-Pole			
250	JD3250WK	JDB3250WK	TA250KB ●

CIRCUIT BREAKERS FOR DC APPLICATIONS

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.

Maximum Continuous Ampere Rating @40°C	**Circuit Breaker Frame Only** ②	**Thermal Magnetic Trip Only**	**Standard Terminals Only**
	High Interrupting Capacity 35 kAIC @ 500 Vdc		See Page 7 for Optional Terminals
	CATALOG NUMBERS		
3-Pole			
70	HJDDC3250F	JT3070T	TA250KB①
90		JT3090T	
100		JT3100T	
125		JT3125T	
150		JT3150T	
175		JT3175T	
200		JT3200T	
225		JT3225T	
250		JT3250T	

Series Connection Diagrams for DC Application



① Individually packed.
② For use with thermal-magnetic trip units only.

Series C Molded Case Circuit Breakers, J-Frame, 70-250 Amperes

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Printed in U.S.A.

June 1994

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Pittsburgh, Pennsylvania, U.S.A. 15220

Westinghouse Series C® J-Frame Termination Accessories

May 1995
Supersedes Selection Data 29-120J, pages 7-8,
dated June 1994
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

LINE AND LOAD TERMINALS

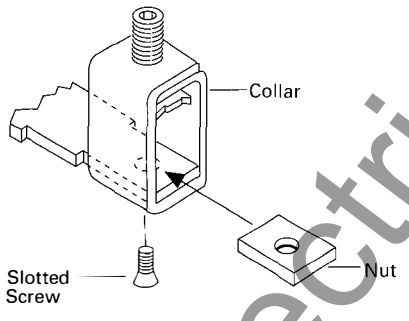
Line and load terminals provide wire connecting capabilities for specific ranges of continuous current current ranges and wire types. All terminals comply with Underwriters Laboratories Inc. Standard UL486A and UL486B and CSA Standard C22.2 No. 65, or Electrical Bulletin 1165. Unless otherwise specified, J-frame circuit breaker line and load terminals are shipped separately for field installation.

The bottom of the standard TA250KB terminal contains a recess which is positioned over the J-frame circuit breaker terminal conductor.

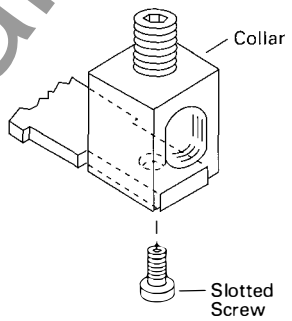
Ordering Information
J-frame circuit breakers use Cu/Al terminals as standard. When optional copper-only terminals are required, order by catalog number. Specify if factory installation is required.

Line and Load Terminal

Maximum Breaker Amps	Terminal Body Material	Wire Type	AWG Wire Range/No. Conductors	Metric Wire Range mm^2	CATALOG NUMBERS
Standard Cu/Al Pressure Terminals					
250	Aluminum	Cu/Al	#4-350 MCM	25-185	TA250KB
250	Stainless Steel	Cu	#4-350 MCM	25-185	T250KB

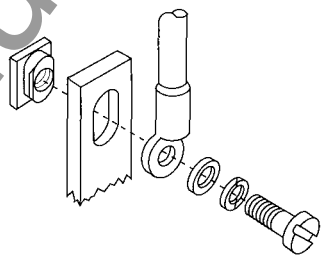


T250KB Terminal



TA250KB Terminal

PLUG NUT



The plug nut is used in applications where screw-connected ring-type terminals are preferred to connect cables to circuit breaker conductors. The plug nut is press-fit into the opening in the circuit breaker terminal conductor. Screws and washers are supplied by customer.

Ordering Information
Plug nuts are available for line/load conductors of J-frame Series C circuit breakers. Plug nuts are supplied in packages of 6.

Thread Type	Thread Size	CATALOG NUMBERS Package of 6
Imperial	.250-20	PLN2
Metric	M-6	PLN2M

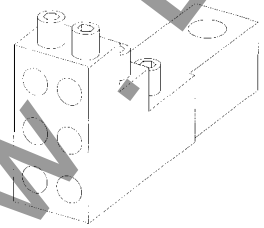
CONTROL WIRE TERMINAL KIT

For use with TA250KB terminals only.

Ordering Information
Package of 12. Priced individually.

CATALOG NUMBER
KCWTK

MULTI WIRE CONNECTORS



Field-installed multi wire connectors for the load side (OFF) end terminals. They are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multi Wire Lug Kits include mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed for copper only as used on the load side (OFF) end.

Ordering Information
Package of 3.

Maximum Amperes	KIT CATALOG NUMBERS	Wires Per Terminal	Wire Size Range AWG Cu	Pressure Screw Torque (lb/in)
225	3TA250J3K	3	#14-2	70
225	3TA250J6K	6	#14-6	25

Westinghouse Series C J-Frame Termination Accessories

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.

Ordering Information
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, 4	0.250-20 x 2.75 inch Pan-Head Steel Screws and Lockwashers	Individual	4218B80G03

Metric Thread

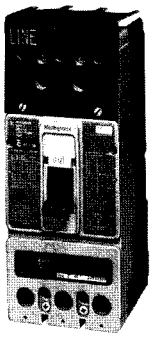
Number of Poles	Description	Type of Mounting	STYLE NUMBER
2, 3, 4	M6 – 0.7 x 70mm Pan-Head Steel Screws and Lockwashers	Individual	4218B80G13

HANDLE EXTENSION

Not included with breaker. Must be purchased separately.

CATALOG NUMBER
HEX3

TERMINAL SHIELDS



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.)

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

Location	No. of Poles	STYLE NUMBERS
Line End	2, 3	1266C07G01
	4	6631C01G01
Load End	2, 3	6641C16G01
	4	6641C16G02

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.)

Ordering Information

CATALOG NUMBER
IPB3 (package of 3)

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Printed in U.S.A.
May 1995

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June 1994
Supersedes Frame Book 29-102, pages 1-32,
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Series C® J-Frame Accessories

GENERAL INFORMATION

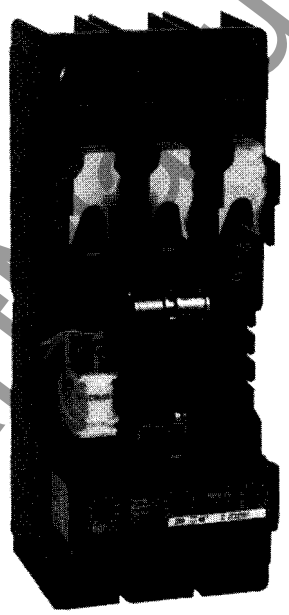
All internal accessories are of the plug-in type and are listed for field installation under UL File E64983.① Internal accessories for sealed circuit breakers are listed under UL File E7819 for factory installation only. The available plug-in accessories include the following:

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

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.

Cover design permits field installation of external accessories such as key interlocks, padlockable handle lock hasp, and electrical or manual handle operations without modifying the cover.

To identify allowable accessory installation combinations, see page 10.



Typical Internal Plug-in Accessory Installed in J-Frame Circuit Breaker

① Some UL listings pending; refer to Cutler-Hammer.

Series C J-Frame Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

	Reference Page	2-, 3-Pole			4-Pole			
Termination Accessories		Lt.	Ctr.	Rt.	Lt.	Ctr.	Rt.	Neu.
Line and Load Terminals	7		●			●		
Plug Nut	7		●			●		
Control Wire Terminal Kit	7		●			●		
Base Mounting Hardware	8		●			●		
Handle Extension	8		●			●		
Terminal Shields	8		●			●		
Interphase Barriers	8		●			●		
Internal Accessories (Only 1 Internal Accessory Per Pole)								
Alarm Lockout (Make/Break)	11	❑		❑	❑		❑	
Auxiliary Switch (1A, 1B)	12	■		■	■		■	
Auxiliary Switch (2A, 2B)	12	■		■	■		■	
Auxiliary Switch/Alarm Lockout	12	❑		❑	❑		❑	
Shunt Trip–Standard	13	■		■	■		■	
Shunt Trip–Low Energy	14	■		■	■		■	
Undervoltage Release Mechanism	15	■		■	■		■	
External Accessories								
Non-Padlockable Handle Block	17		■			■		
Padlockable Handle Block	17		■			■		
Padlockable Handle Lock Hasp	17	❑		❑	❑		❑	
Cylinder Lock	17	❑		❑				
Key Interlock Kit	18	❑		❑	❑		❑	
Sliding Bar Interlock–Requires 2 Breakers	18		●					
Electrical (Solenoid) Operator	19		●			●		
IQ Energy Sentinel	19		●					
Plug-In Adapters	20		●			●		
Rear Connecting Studs	20		●			●		
Panelboard Connecting Straps	21		●			●		
Handle Mechanisms	23		●			●		
Door Hardware/Accessories	25		●			●		
Modifications (Refer to Cutler-Hammer)								
Special Calibration	27		●			●		
Moisture Fungus Treatment	27		●			●		
Freeze-Tested Circuit Breakers	27		●			●		
Marine Application	27		●			●		

■ Applicable in indicated pole position ❑ May be mounted on left or right pole – not both ● Accessory available/Modification available

① 2-Pole breaker supplied in 3-pole frame. Current carrying parts omitted from center pole.
② Right pole of a 4-pole breaker use pigtail accessories only.

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Printed in U.S.A.
June 1994

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June 1994
Supersedes Frame Book 29-102, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
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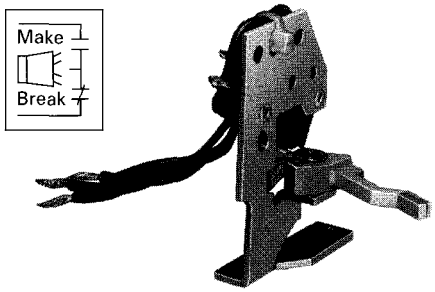
Series C® J-Frame Internal Accessories

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 SPDT (single-pole double-throw) switch 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.

Electrical Rating Data①②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	Dc	0.5③	
250	Dc	0.25③	

Ordering Information

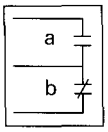
Alarm (Signal)/Lockout Switch

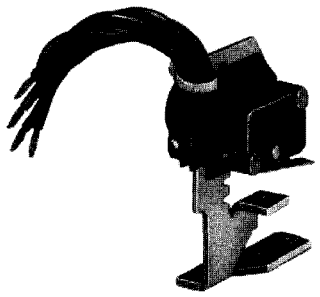
Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	**Factory Mounted**				**Field Mounted**	
		Connection Type and Location				Field Installation Kits④	
		18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear⑤	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left Right⑤	A1L2LA A1L2RA	A1L2LB A1L2RB	A1L2LC A1L2RC	A1L2LT A1L2RT⑥	A1L2LPK A1L2RPK	A1L2LTK A1L2RTK⑥

① Endurance — 6000 electrical operations plus 2000 mechanical operations.
● Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc. for field installation on interchangeable trip unit breakers under E64983.
⑤ Standard mounting location — leads exit rear of breaker.
⑥ Not for use on 4-pole circuit breakers.

Series C J-Frame Internal Accessories

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.

Electrical Rating Data①②

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

Ordering Information

Auxiliary Switch

Number of Sets of Contacts (1a and 1b)	Mounting Location (Pole)	Factory Mounted				Field Mounted	
		Connection Type and Location				Field Installation Kits④	
		18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear⑤	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left	A1X2LA	A1X2LB	A1X2LC	A1X2LT	A1X2PK	A1X2LTK
	Right⑤	A1X2RA	A1X2RB	A1X2RC	A1X2RT⑥	A1X2PK	A1X2RTK⑥
2	Left	A2X2LA	A2X2LB	.....	A2X2LT	A2X2PK	A2X2LTK
	Right⑤	A2X2RA	A2X2RB	.....	A2X2RT⑥	A2X2PK	A2X2RTK⑥

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)	Factory Mounted				Field Mounted	
		Connection Type and Location				Field Installation Kits④	
		18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear⑤	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left	AAL2LA	AAL2LB	.....	AAL2LT	AAL2LPK	AAL2LTK
	Right⑤	AAL2RA	AAL2RB	.....	AAL2RT⑥	AAL2RPK	AAL2RTK⑥

① Endurance — 6000 electrical operations plus 2000 mechanical operations.
② Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc. for field installation or interchangeable trip unit breakers under E64983.
⑤ Standard mounting location — leads exit rear of breaker.
⑥ Not for use on 4-pole circuit breakers.

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Supersedes Frame Book 29-102, pages 1-32,
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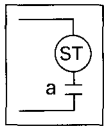
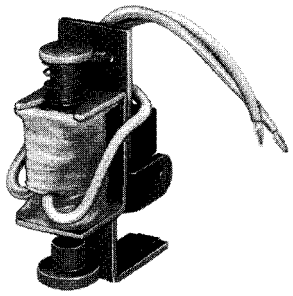
Series C® J-Frame Internal Accessories

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 the Electrical Rating Table, are suitable for operation at 55 percent of rated voltage.

Electrical Rating Data①②③

50-60 Hz			Dc		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	8.4	31	12	8.4	50
24		173	24		247
48	33.6	686	48	33.6	1094
60		1014	60		1698
110④	60.5	66	110	77	112
120④		84	120		138
127④		102	125		150
208④		354	...	..	....
220④		396	...	..	....
240④		432	...	..	....
380	276	95	220	154	40
400		108	250	..	58
415		120	...	..	....
440		136	...	..	....
480	336	34	...	..	....
525		42	...	..	....
550		50	...	..	....
600		60	...	..	....

Ordering Information

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. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

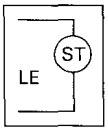
Shunt Trip

Voltage Rating (ac Freq = 50/60 Hz)	Factory Mounted				Field Mounted	
	Connection Type and Location				Field Installation Kits●	
	18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear⑥	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole Mounting AC/DC Ratings⑥						
12-24 Vac or Vdc	SNT2LA04	SNT2LB04	SNT2LC04	SNT2T04	SNT2P04K	SNT2T04K
48-60 Vac or Vdc	SNT2LA06	SNT2LB06	SNT2LC06	SNT2T06	SNT2P06K	SNT2T06K
110-240 Vac or 110-125 Vdc●	SNT2LA11	SNT2LB11	SNT2LC11	SNT2T11	SNT2P11K	SNT2T11K
380-440 Vac or 220-250 Vdc	SNT2LA14	SNT2LB14	SNT2LC14	SNT2T14	SNT2P14K	SNT2T14K
480-600 Vac	SNT2LA18	SNT2LB18	SNT2LC18	SNT2T18	SNT2P18K	SNT2T18K
Right Pole Mounting AC/DC Ratings						
12-24 Vac or Vdc	SNT2RA04	SNT2RB04	SNT2RC04	SNT2T04⑧	SNT2P04K	SNT2T04K⑧
48-60 Vac or Vdc	SNT2RA06	SNT2RB06	SNT2RC06	SNT2T06⑧	SNT2P06K	SNT2T06K⑧
110-240 Vac or 110-125 Vdc⑦	SNT2RA11	SNT2RB11	SNT2RC11	SNT2T11⑥	SNT2P11K	SNT2T11K⑧
380-440 Vac or 220-250 Vdc	SNT2RA14	SNT2RB14	SNT2RC14	SNT2T14⑧	SNT2P14K	SNT2T14K⑧
480-600 Vac	SNT2RA18	SNT2RB18	SNT2RC18	SNT2T18⑥	SNT2P18K	SNT2T18K⑧

① Approximate unlatching time — 6 milliseconds.
② Approximate total circuit breaker contact opening time — 18 milliseconds.
● Endurance — 6000 electrical operations plus 2000 mechanical operations.
④ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.
⑤ Listed with Underwriters Laboratories, Inc. for field installation under E64983.
⑥ Standard mounting location — leads exit rear of breaker.
⑦ Suitable for use with Class 1 ground fault sensing element.
⑧ Not for use on 4-pole circuit breakers.

Series C J-Frame Internal Accessories

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 100 microfarad capacitor charged to 28 Vdc is discharged 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 resets, the shunt trip reset arm is actuated by the circuit breaker handle, 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. Cutoff provisions required in control circuit.

Ordering Information
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. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Low Energy Shunt Trip①

Mounting Positions	**Factory Mounted**				**Field Mounted**	
	Connection Type and Location				Field Installation Kits②	
	18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear③	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole③ Right Pole	LST2LA LST2RA	LST2LB LST2RB	LST2LC LST2RC	LST2LT LST2RT④	LST2LPK LST2RPK	LST2LTK LST2RTK④

① Cutoff provisions required in control circuit.
② Listed with Underwriters Laboratories, Inc. for field installation under E64983.
③ Standard mounting location – leads exit rear of breaker.
④ Not for use on 4-pole circuit breakers.

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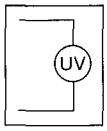
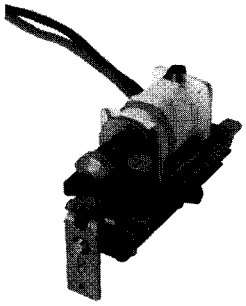
Series C® J-Frame Internal Accessories

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.

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.

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

Ordering Information
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. Performance data is shown on applicable circuit breaker accessory nameplates.

① Endurance: 6000 electrical operations plus 2000 mechanical operations.
② For electrical rating data for manual, automatic and electrical reset undervoltage release mechanisms, refer to Cutler-Hammer.
③ Listed with Underwriters Laboratories, Inc. for field installation under E64983.
④ Not for use on right pole of 4-pole circuit breakers.
⑤ Standard mounting location – leads exit rear of breaker.

Electrical Rating Data ①②

50/60 Hz					Dc				
Supply Voltage	Dropout Voltage		Pickup Voltage	VA	Supply Voltage	Dropout Voltage		Pickup Voltage	VA
	Min.	Max.	Max.			Min.	Max.	Max.	
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				1.6
120				2.1	120	44.5	77	93.5	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					

Undervoltage Release Mechanism

Voltage Rating (ac Freq = 50/60 Hz)	Factory Mounted				Field Mounted	
	Connection Type and Location				Field Installation Kits③	
	18-inch Pigtail Leads			Terminal Block②	Pigtail Leads	Terminal Block④
	Same Side	Rear③	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole Mounting AC Ratings ⑤						
12 Vac	UVH2LA02	UVH2LB02	UVH2LC02	UVH2LT02	UVH2LP02K	UVH2LT02K
24 Vac	UVH2LA03	UVH2LB03	UVH2LC03	UVH2LT03	UVH2LP03K	UVH2LT03K
48-60 Vac	UVH2LA05	UVH2LB05	UVH2LC05	UVH2LT05	UVH2LP05K	UVH2LT05K
110-127 Vac	UVH2LA08	UVH2LB08	UVH2LC08	UVH2LT08	UVH2LP08K	UVH2LT08K
208-240 Vac	UVH2LA11	UVH2LB11	UVH2LC11	UVH2LT11	UVH2LP11K	UVH2LT11K
380-480 Vac	UVH2LA15	UVH2LB15	UVH2LC15	UVH2LT15	UVH2LP15K	UVH2LT15K
Right Pole Mounting AC Ratings						
12 Vac	UVH2RA02	UVH2RB02	UVH2RC02	UVH2RT02	UVH2RP02K	UVH2RT02K
24 Vac	UVH2RA03	UVH2RB03	UVH2RC03	UVH2RT03	UVH2RP03K	UVH2RT03K
48-60 Vac	UVH2RA05	UVH2RB05	UVH2RC05	UVH2RT05	UVH2RP05K	UVH2RT05K
110-127 Vac	UVH2RA08	UVH2RB08	UVH2RC08	UVH2RT08	UVH2RP08K	UVH2RT08K
208-240 Vac	UVH2RA11	UVH2RB11	UVH2RC11	UVH2RT11	UVH2RP11K	UVH2RT11K
380-480 Vac	UVH2RA15	UVH2RB15	UVH2RC15	UVH2RT15	UVH2RP15K	UVH2RT15K
Left Pole Mounting DC Ratings ⑤						
12 Vdc	UVH2LA20	UVH2LB20	UVH2LC20	UVH2LT20	UVH2LP20K	UVH2LT20K
24 Vdc	UVH2LA21	UVH2LB21	UVH2LC21	UVH2LT21	UVH2LP21K	UVH2LT21K
48-60 Vdc	UVH2LA23	UVH2LB23	UVH2LC23	UVH2LT23	UVH2LP23K	UVH2LT23K
110-125 Vdc	UVH2LA26	UVH2LB26	UVH2LC26	UVH2LT26	UVH2LP26K	UVH2LT26K
220-250 Vdc	UVH2LA28	UVH2LB28	UVH2LC28	UVH2LT28	UVH2LP28K	UVH2LT28K
Right Pole Mounting DC Ratings						
12 Vdc	UVH2RA20	UVH2RB20	UVH2RC20	UVH2RT20	UVH2RP20K	UVH2RT20K
24 Vdc	UVH2RA21	UVH2RB21	UVH2RC21	UVH2RT21	UVH2RP21K	UVH2RT21K
48-60 Vdc	UVH2RA23	UVH2RB23	UVH2RC23	UVH2RT23	UVH2RP23K	UVH2RT23K
110-125 Vdc	UVH2RA26	UVH2RB26	UVH2RC26	UVH2RT26	UVH2RP26K	UVH2RT26K
220-250 Vdc	UVH2RA28	UVH2RB28	UVH2RC28	UVH2RT28	UVH2RP28K	UVH2RT28K

Series C J-Frame Internal Accessories

Cutler-Hammer
Westinghouse &
Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.

June 1994

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June 1994
Supersedes Frame Book 29-102, pages 1-32,
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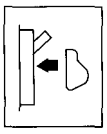
Series C® J-Frame External Accessories

NON-PADLOCKABLE HANDLE BLOCK

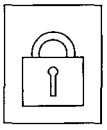


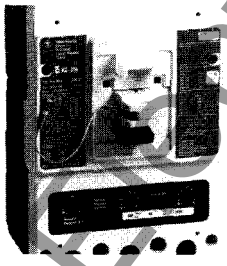
The nonlockable handle block secures the circuit breaker handle in either the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle block holds the circuit breaker handle in the ON position.) The device is positioned over the circuit breaker handle and secured by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

Ordering Information
One per circuit breaker

CATALOG NUMBER
LKD3

PADLOCKABLE HANDLE BLOCK

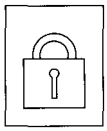


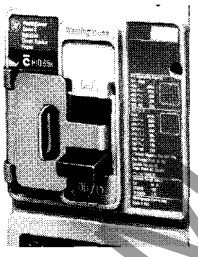


The device is positioned in the cover opening to prevent handle movement. Will accommodate one 5/16 padlock.

CATALOG NUMBER
PHB3

PADLOCKABLE HANDLE LOCK HASP①





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 1/4 inch (6mm) shackles. One per circuit breaker. (Field installation only.)

Ordering Information

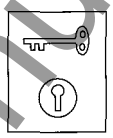
CATALOG NUMBER
PLK3

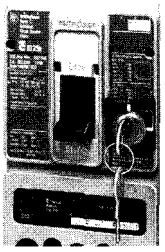
For padlockable handle lock hasp to padlock handle in OFF position only order either catalog number listed below.

For Left Side Mounting
PLK3LOFF

For Right Side Mounting
PLK3ROFF

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.)

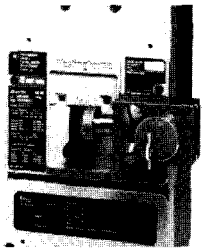
Ordering Information

CATALOG NUMBER
Order by Description

① Underwriters Laboratories, Inc. listing pending under UL File E7819.

Series C J-Frame External Accessories

KEY INTERLOCK KIT (Lock Not Included)



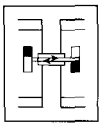
The key interlock is used to externally lock the circuit breaker handle in the OFF position. When the key interlock is locked, an extended deadbolt blocks movement of the circuit breaker handle. Uniquely coded keys are removable only with the deadbolt extended. Each coded key controls a group of circuit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

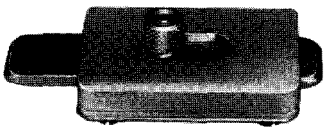
The key interlock assembly consists of a mounting kit and a purchaser supplied deadbolt lock. The mounting kit comprises a mounting plate, which is secured to the circuit breaker cover in either the left- or right-pole position; key interlock mounting hardware; and a wire seal. Specific mounting kits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

Ordering Information
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	B4003-1	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





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.)

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

CATALOG NUMBER
SBK2

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June 1994
Supersedes Frame Book 29-102, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
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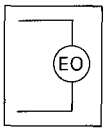
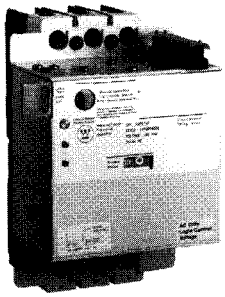
Series C® J-Frame External Accessories

ELECTRICAL (SOLENOID) OPERATOR





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 (80ms), 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 three padlock shackles with a maximum diameter of 1/4 inch (6mm). The table above provides electrical rating data for the electrical (solenoid) operator.

Electrical Rating Data ①②③④

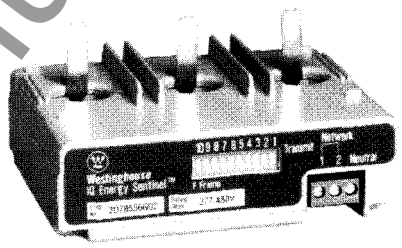
Voltage⑤ (V)	Inrush Current (A)	Fuse (A)
120	24	6
240	12	4

Ordering Information

Operating Voltage	Frequency	Terminal Block CATALOG NUMBERS
120 240	50/60 Hz Ac	EOP2T07 EOP2T11
120 240	Dc	EOP2T07DC EOP2T11DC

① Underwriters Laboratories listed under UL File E64983.
② The electrical operator design has been endurance tested for 6,000 electrical operations.
③ Frequency: 50/60 Hz.
④ Maximum operating time: 5 cycles (80 ms).
⑤ Tolerance: +10%, –15% of nominal voltage.

IQ ENERGY SENTINEL



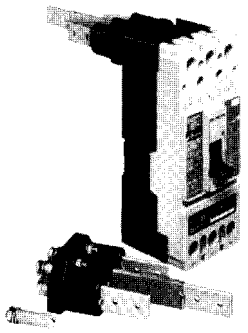
The IQ Energy Sentinel is a highly accurate, microprocessor-based, breaker-mounted device designed to monitor power and energy readings. It represents an alternative to watt meters, watt-hour meters, and watt demand meters. Key advantages include savings in space, lower installation costs, and remote monitoring capability.

The IQ Energy Sentinel mounts on the load side of a Westinghouse Series C J-(250 Amp) frame circuit breaker. It can be applied on three-phase, four-wire systems, or single-phase, three-wire systems with voltage connected through phases A and C.

For more information see Descriptive Bulletin 8178.

Series C J-Frame External Accessories

PLUG-IN ADAPTERS

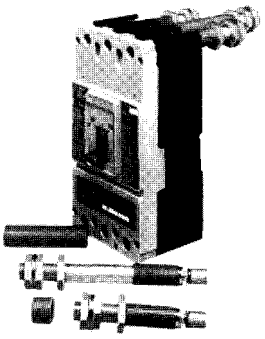


Plug-in adapters simplify installation and front removal of circuit breakers. Individual line and load plug-in adapters are available for rear connection applications on 2-, 3-, and 4-pole circuit breakers. Common mounting plates for line and load end adapters are available. The plug-in adapters are rated 250A. (Field installation only.)

Ordering Information
Plug-in adapters are available for 2-, 3-, and 4-pole circuit breaker configurations. All adapters are rated 250A continuous. 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.)

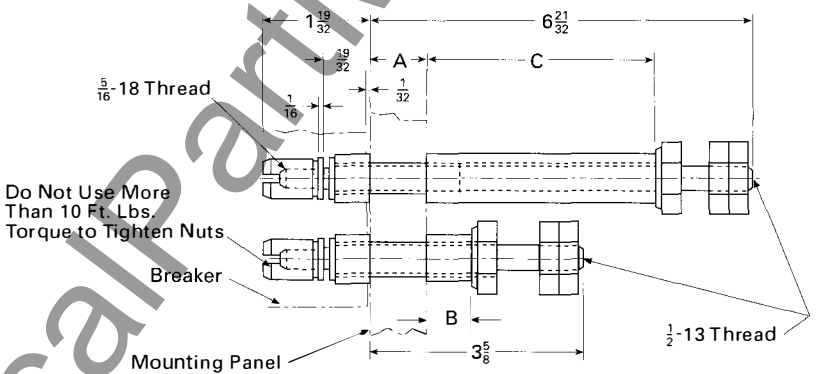
Terminal End	2-Pole	3-Pole	4-Pole
	STYLE/CATALOG NUMBERS		
Line Load 1 Line and 1 Load	1260C86G05 1260C86G07 506C144G27	1260C86G06 1260C86G08 506C144G28	1231C67G01 1231C67G02 .....
Mounting Plate	①	PMP23	.....

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 250A.

Ordering Information
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. Tubes must be ordered separately. Connecting studs are available only with English thread sizes.



Stud Ampere Rating	STUD STYLE NUMBER	Panel Thickness (Inches)	Tube Length (Inches)		TUBE STYLE NUMBER
		A	B	C	
250A Short	5010D23G01	3/4 – 1	27/32	....	456D983H05
250A Short	5010D23G01	1/2 – 3/4	1 3/32	....	456D983H06
250A Short	5010D23G01	1/4 – 1/2	1 11/32	....	456D983H07
250A Long	5010D23G02	3/4 – 1	....	3 7/8	5010D23H05
250A Long	5010D23G02	1/2 – 3/4	....	4 1/8	5010D23H06
250A Long	5010D23G02	1/4 – 1/2	....	4 3/8	5010D23H07

① Use 3-pole mounting plate for 2-pole circuit breaker.

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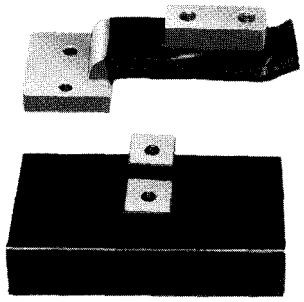
Series C® J-Frame External Accessories

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 250A rating for outside and center poles. (Field installation only.)

Ordering Information
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.

Refer to panelboard manufacturer for compatibility.

Panelboard Connecting Straps

Bus Spacing (Inches)	Continuous Current Rating (Amperes)	Pole Connector Type	
		Center	Outside
		STYLE NUMBERS	
3½	250	2600D26G01	2600D26G02

Mounting Bracket

STYLE NUMBERS	
2-Pole	3-Pole
1576707	1576707

Series C J-Frame External Accessories

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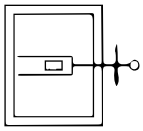
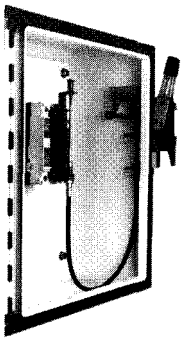
Series C® J-Frame External Accessories

FLEX SHAFT™ HANDLE MECHANISM





The Flex Shaft type handle mechanism is an extra heavy duty handle mechanism designed for mounting in flange-type enclosures. An operating handle, flexible shaft, and mechanism are required for standard application.

The handle can be locked in the RESET position with up to three padlocks. The handle is suitable for NEMA 1, 3R, 4, 4X, and 12 fabricated enclosures. It is supplied for mounting in right-hand flange enclosures. The handle fits the industry standard cutout.

Eight lengths of shafts are available for use with the wide range of depths of various enclosures (3 feet through 10 feet). These choices enable this mechanism to be mounted in various depth, width, and height enclosures. Note: when selecting the length of shaft, ensure minimum bending radius of 4 inches is maintained to operate properly.

The standard method of shipment includes the mechanism preset at the factory; however, minor field adjustments may be required.

For this publication, the term Circuit Breaker shall also include the molded case switch and Series C motor circuit protector (HMCP).

Ordering Information
Catalog Number includes complete assembly consisting of handle, flexible shaft, operating mechanism, and door interlock hardware to fit industry standard flange cutout.

Circuit Breaker	Length of Flex Shaft (in feet)	CATALOG NUMBER
J-Frame	3	F2S03
	4	F2S04
	5	F2S05
	6	F2S06
	7	F2S07
	8	F2S08
	9	F2S09
	10	F2S10

Note: NEMA 4/4X handle mechanisms are available. Add suffix X to complete catalog number.

Accessories

Standard Door Hardware
(Required Adapter Kit Below)

CATALOG NUMBER	Latch	Panel Height
DH1R	2 point	Up to 30 in.
DH2R	2 point	Up to 40 in.
DH3R	3 point	Over 40 in.

Refer to page 25 for additional information.

Door Hardware Adapter Kit
(Required on Standard Door Hardware)

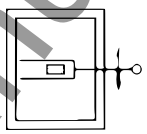
CATALOG NUMBER
AMTDHA

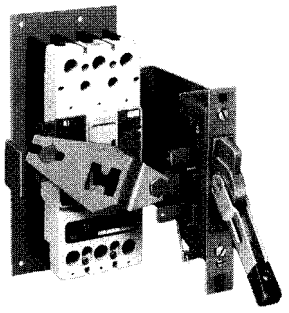
Refer to page 25 for additional information.

Door Hardware for Hoffman A – 25 Enclosure
Kit consists of special door hardware and door interlock pin. Available for right hand flange mounting only.

CATALOG NUMBER	Latch	Panel Height
HDH-2R	2 point	Up to 40 in.
HDH-3R	3 point	Over 40 in.

TYPE SM SAFETY HANDLE MECHANISM ①





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 application is also available. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of 3/8 inch (9.52mm).

Ordering information
Right-Hand Mounting Enclosure Cover

CATALOG NUMBER	
Hinged on Left	SM250JR

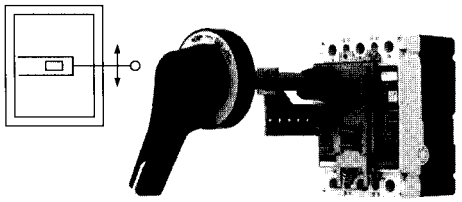
Left-Hand Mounting Enclosure Cover

CATALOG NUMBER	
Hinged on Right	SM250JL

① Underwriters Laboratories listed under UL File 64983.

Series C J-Frame External Accessories

SERIES C ROTARY HANDLE MECHANISM



The Westinghouse general purpose Rotary handle mechanisms are suitable for use with NEMA 1, 3R, 4, and 12 fabricated enclosures. They are designed for use with Series C J-Frame Circuit Breakers, Molded Case Switches, and Motor Circuit Protectors (HMCP).

Required for a standard application are the operating handle, shaft and mechanism.

The operating handle has been designed to meet NFPA 79 requirements. It may be mounted in either the horizontal or the vertical direction. The handle was ergonomically designed with extra clearance for a "gloved hand" to operate. It may be padlocked in the OFF position utilizing 3 padlocks.

The standard label on the operating handle indicates ON/Tripped/OFF/Reset.

Ordering Information

Breaker Frame	Shaft Length (inches)	COMPLETE CATALOG NUMBER●	SEPARATE STYLE NUMBERS		
			Standard Handle②③	Breaker④ Mechanism	Shaft⑤
J	6	HM2R06	6648C22G01	6648C23G02	4217B37G04
	12	HM2R12	6648C22G01	6648C23G02	4217B37G01
	16	HM2R16	6648C22G01	6648C23G02	4217B37G02
	24	HM2R24	6648C22G01	6648C23G02	4217B37G03

Note: NEMA 4 handle mechanisms are available. Add suffix X to complete catalog number.

To meet the various enclosure depths, four variable depth shafts are offered (6 in., 12 in., 16 in., and 24 in.). Each shaft includes a support brace to ensure proper alignment. In addition, the 16 in. and 24 in. extra long shafts include an adjustable support bracket.

The standard mechanism located on the breaker does include means for internally locking the breaker in the "OFF" position with up to 3 padlocks each with a maximum diameter of .312 in.

NEMA 4 handles are similar to standard handles except they include an internal neoprene gasket. Due to gasketing effect between the handle and the housing, the handle may not indicate a tripped position.

Accessories

As an option, an auxiliary switch is offered so that the control panel builder may electrically indicate the status of the breaker. This accessory would be mounted on the mechanism and comes with 24 in. pigtail leads.

Microswitch

(Includes 24 in. Pigtail leads.)

STYLE NUMBER
5108A61G01

① Complete catalog number includes the standard handle, mechanism, shaft, and support brace/bracket.
② Handle is designed suitable for NEMA 1, 3R, and 12 enclosures.
③ The standard handle label indicates ON/Tripped/OFF/Reset.
④ Breaker mechanism includes a shaft support bracket and its parts.
⑤ Longer shafts (16 in. and 24 in.) include an adjustable support extension.

Cutler-Hammer
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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
June 1994

June 1994
Supersedes Frame Book 29-102, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

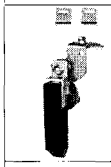
Series C® J-Frame External Accessories

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 hinge on right.

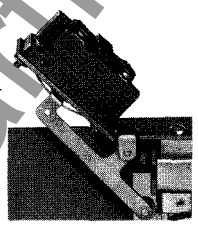
● Width spacer kits cannot be used with short rod at minimum enclosure depth.

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

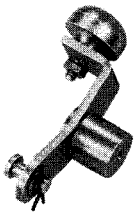
Electrical Interlock Kit: Provides 1 N.C. and 1 N.O. contacts (SPDT switch) for use with auxiliary circuits. Mounts to end of mechanism housing as shown.



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

STYLE NUMBER	
Right- or Left-Hand Meeting	656D669G01

For Door Hardware Using Roller Latches

STYLE NUMBERS	
Right-Hand Meeting	370D801G04
Left-Hand Meeting	370D802G04

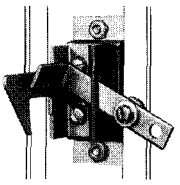
Remote Mounting Kit
Enables the operating mechanism to be mounted remotely on a vertical centerline from the circuit breaker or disconnect switch.

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

Door Hardware Kit

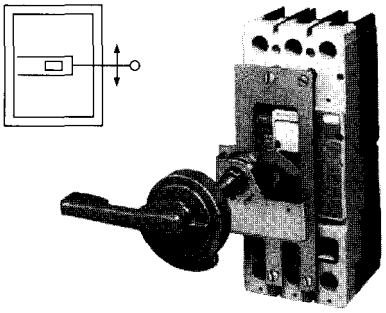


This adapter kit is for use with door hardware kits DH1R, DH2R, or DH3R for type SM handle mechanisms to permit the use and interlocking of right-hand installation of the type AMT handle mechanism (Below-the-Handle or Above-the-Handle type).

CATALOG NUMBER
AMTDHA

Series C J-Frame External Accessories

VARI-DEPTH HANDLE MECHANISM①



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 5/16 inch (7.94mm).

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

STYLE NUMBER	
Standard Finish	504C323G04

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.

STYLE NUMBER	
NEMA 4 and 9 Kit	314C794G10

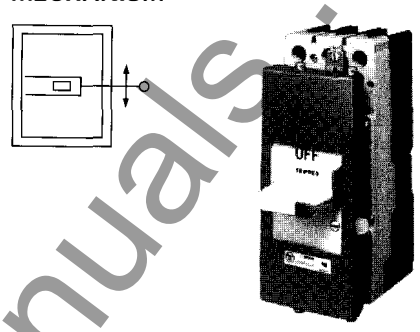
STYLE NUMBER	
NEMA 7 Kit	314C794G09

STYLE NUMBER	
Adapter Bushing Only	314C794G04

Ordering Information②

Mechanisms③④		Handle	Shaft			
Standard – (No Internal Lockoff)	Special – (With Internal Lockoff)	NEMA 1, 3R, 12 (With Hardware)	Standard		Long	
STYLE NUMBERS			STYLE NUMBER	Panel Depth	STYLE NUMBER	Panel Depth
5092A62G03	5092A62G04	504C323G03	47A4446G36	5⅞-11⅞	47A4446G37	11⅞-14⅞

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 ⅜ inch (7.92mm). UL File E56845.

Ordering Information

For use with NEMA 1 Enclosure Catalog

CATALOG NUMBER
SMCU250JD

For use with NEMA 12 Enclosure Catalog

CATALOG NUMBER
CMCU250JD

● 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 connect studs are used, refer to Cutler-Hammer.
③ Includes hardware.
④ Outline and drilling plan reference: Drawing 653D270.

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Printed in U.S.A.

June 1994

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June 1994
Supersedes Frame Book 29-103, pages 1-32,
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31-500A

Series C® Molded Case Circuit Breakers K-Frame

Electronic – 70-400 Amperes
Thermal-Magnetic – 100-400 Amperes

FACTORY SEALED CIRCUIT BREAKERS WITH NON-INTERCHANGEABLE THERMAL-MAGNETIC TRIP UNITS SUITABLE FOR REVERSE FEED USE

Maximum Continuous Ampere Rating @ 40°C	240 Vac Rated, 250 Vdc		
	Complete Circuit Breaker		
	Without Line and Load Terminals	With Line Terminals Only	With Standard Line and Load Terminals Only
	CATALOG NUMBERS		
2-Pole			
100	—	—	—
125	—	—	—
150	—	—	—
175	—	—	—
200	—	—	—
225	—	—	—
250	DK2250W	DK2250Y	DK2250
300	DK2300W	DK2300Y	DK2300
350	DK2350W	DK2350Y	DK2350
400	DK2400W	DK2400Y	DK2400
3-Pole			
100	—	—	—
125	—	—	—
150	—	—	—
175	—	—	—
200	—	—	—
225	—	—	—
250	DK3250W	DK3250Y	DK3250
300	DK3300W	DK3300Y	DK3300
350	DK3350W	DK3350Y	DK3350
400	DK3400W	DK3400Y	DK3400

Maximum Continuous Ampere Rating @ 40°C	600 Vac Rated, 250 Vdc	
	Complete Circuit Breaker	
	Without Line and Load Terminals	With Standard Line and Load Terminals
	CATALOG NUMBERS	
2-Pole		
100	KDB2100W	KDB2100
125	KDB2125W	KDB2125
150	KDB2150W	KDB2150
175	KDB2175W	KDB2175
200	KDB2200W	KDB2200
225	KDB2225W	KDB2225
250	KDB2250W	KDB2250
300	KDB2300W	KDB2300
350	KDB2350W	KDB2350
400	KDB2400W	KDB2400
3-Pole		
100	KDB3100W	KDB3100
125	KDB3125W	KDB3125
150	KDB3150W	KDB3150
175	KDB3175W	KDB3175
200	KDB3200W	KDB3200
225	KDB3225W	KDB3225
250	KDB3250W	KDB3250
300	KDB3300W	KDB3300
350	KDB3350W	KDB3350
400	KDB3400W	KDB3400

Series C Molded Case Circuit Breakers, K-Frame, Electronic – 70-400 Amperes; Thermal-Magnetic – 100-400 Amperes

MOLDED CASE SWITCHES

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 UL 1087.

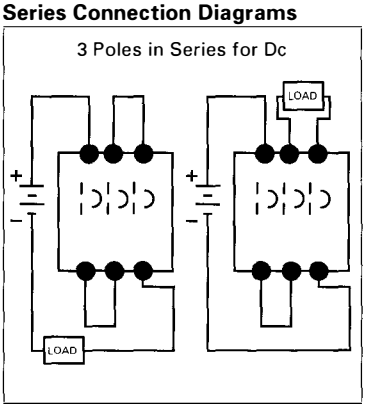
Maximum Continuous Ampere Rating @40°C	**240 Vac Maximum, 250 Vdc**	**600 Vac Maximum, 250 Vdc**	**600 Vac Maximum, 250 Vdc**
	Complete Circuit Breaker with Standard Line and Load Terminals	Complete Circuit Breaker with Standard Line and Load Terminals	Complete Circuit Breaker with Standard Line and Load Terminals. Suitable for Reverse Feed Use.
	CATALOG NUMBERS		
2-Pole			
400	DK2400K	KD2400K	KDB2400K
3-Pole			
400	DK3400K	KD3400K	KDB3400K
4-Pole①			
400	—	KD4400K	—

CIRCUIT BREAKERS FOR DC APPLICATIONS

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.

Continuous Ampere Rating @40°C	**Circuit Breaker Frame only**② 500 Vdc	**Thermal Magnetic Trip Units Only**	**Terminals Only** See Page 9 for Optional Terminals
	CATALOG NUMBERS		
3-Pole			
100	HKDDC3400F	KT3100T	TA300K③
125		KT3125T	TA300K③
150		KT3100T	TA300K③
175		KT3175T	TA300K③
200		KT3200T	TA300K③
225		KT3225T	TA300K③
250		KT3250T	TA350K③
300		KT3300T	TA350K③
350		KT3350T	TA350K③
400		KT3400T	3TA400K④

Series Connection Diagrams



① For Ac use only.
② For use with thermal-magnetic trip units only.
③ Individually packed.
④ TA400K, T400K and TA401K terminal kits contain one terminal for each pole and one terminal cover.

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Series C® Molded Case Circuit Breakers K-Frame

Electronic – 70-400 Amperes
Thermal-Magnetic – 100-400 Amperes

100% RATED CIRCUIT BREAKERS

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90°C wire is applied at the 75°C ampacity. All 100% rated circuit breakers have electronic trip units.

Max. Continuous Ampere Rating @40°C	Circuit Breaker Frame Only		Digitrip RMS 310 Trip Unit Only				Digitrip 310 Rating Plug Only			Standard Terminals Only
	Standard Interrupting Capacity 35 kAIC @ 480 Vac	High Interrupting Capacity 65 kAIC @ 480 Vac	Standard	Options			Ampere Rating	Fixed Rating Plugs	Adjustable Rating Plugs Ampere Rating Catalog Number	See Page 9 for Optional Terminals
			Adjustable Short Time Delay with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay Ground Fault Protection	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Delay and Ground Fault Protection				
	CATALOG NUMBERS									
3-Pole										
125	CKD3400F	CHKD3400F	KES3125LS	KES3125LSI	KES3125LSG	KES3125LSIG	70 90 100 110 125	1KES070T 1KES090T 1KES100T 1KES110T 1KES125T	70/90/100/125 A1KES125T1	TA300K ①
250	CKD3400F	CHKD3400F	KES3250LS	KES3250LSI	KES3250LSG	KES3250LSIG	125 150 160 175 200 225 250	2KES125T 2KES150T 2KES160T 2KES175T 2KES200T 2KES225T 2KES250T	125/150/200/250 A2KES250T1	TA300K ①
400	CKD3400F	CHKD3400F	KES3400LS	KES3400LSI	KES3400LSG	KES3400LSIG	200 225 250 300 350 400	4KES200T 4KES225T 4KES250T 4KES300T 4KES350T 4KES400T②	200/250/300/400 A4KES400T1	TA300K ① TA300K ① TA300K ① TA300K ① TA350K ① 3TA400K ②

SOLID STATE (ELECTRONIC) PORTABLE TEST KIT

The solid state (electronic) portable test kit provides verification of performance of all ratings of electronic 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.

Ordering Information

CATALOG NUMBER
STK2

- Individually packed.
- TA400K, T400K and TA401K terminal kits contain one terminal for each pole and one terminal cover.

Series C Molded Case Circuit Breakers, K-Frame, Electronic – 70-400 Amperes; Thermal-Magnetic – 100-400 Amperes

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Series C® K-Frame Termination Accessories

LINE AND LOAD TERMINALS

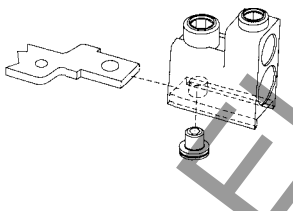
Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories, Inc., Standards UL486A and UL486B and CSA Standard C22.2 No. 65, or Electrical Bulletin 1165. Unless otherwise specified,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

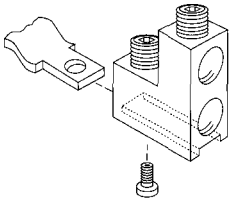
The circuit breaker line/load terminal conductor is positioned in the recess in the bottom wire connecting terminal. The wire connecting terminal is secured with a 7/16 inch hollow terminal mounting screw, which can be checked for the correct torque loading or retightened from the front of the circuit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

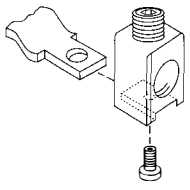
Ordering Information
K-frame circuit breakers use Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalog number. Specify if factory installation is required.

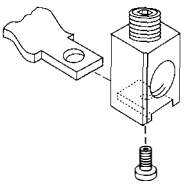
Line and Load Terminals

Maximum Breaker Amps	Terminal Body Material	Wire Type	AWG Wire Range/No. Conductors	Metric Wire Range mm²	CATALOG NUMBERS
Standard Cu/Al Pressure Terminals					
225	Aluminum	Cu/Al	3-350/(1)	35-185	TA300K①
350	Aluminum	Cu/Al	250-500/(1)	120-240	TA350K①
400	Aluminum	Cu/Al	3/0-250/(2)	95-120	2TA400K - 2-Pole Kit②
					3TA400K - 3-Pole Kit②
					4TA400K - 4-Pole Kit②
Optional Copper and Cu/Al Pressure Type Terminals					
225	Copper	Cu	3-350/(1)	35-185	T300K①
350	Copper	Cu	250-500/(1)	120-240	T350K①
400	Copper	Cu	3/0-350/(2)	95-120	2T400K - 2-Pole Kit②
					3T400K - 3-Pole Kit●
					4T400K - 4-Pole Kit②
400	Aluminum	Cu/Al	2/0-250/(2) or 2/0-500/(1)	70-120 70-240 70-240	2TA401K - 2-Pole Kit② 3TA401K - 3-Pole Kit② 4TA401K - 4-Pole Kit②


TA401K


TA400K
T400K


TA350K
T350K

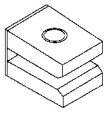

TA300K
T300K

See page 14 for other termination accessories.

① Individually packed.
② TA400K, T400K and TA401K terminal kits contain one terminal for each pole and one terminal cover.

Series C K-Frame Termination Accessories

KEEPER NUT



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.)

Ordering Information
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 NUMBERS Package of 3
Imperial	.375-16	Line	KPR3A
		Load	KPR3B
Metric	M-8	Line	KPR3AM
		Load	KPR3BM

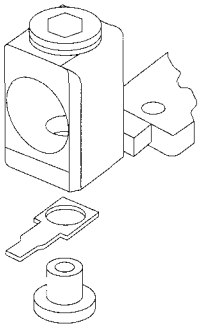
TERMINAL ADAPTER FOR USE IN REPLACING LB/DA BREAKERS

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.) Package of 3.

Ordering Information

CATALOG NUMBER
TAD3

CONTROL WIRE TERMINAL KIT



For use with aluminum or copper terminals only.

Ordering Information
Package of 14. Priced individually.

CATALOG NUMBER
KCWTK

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.

Ordering Information
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, 4	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, 4	M6 – 0.7 x 38mm Pan-Head Steel Screws and Lockwashers	Individual	4218B80G14

HANDLE EXTENSION

Not included with breaker. Must be purchased separately.

Ordering Information

CATALOG NUMBER
HEX3

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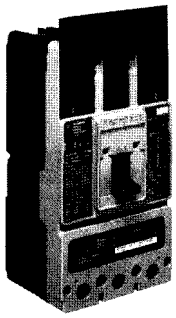
Westinghouse Series C® K-Frame Termination Accessories

April 1995
Supersedes Selection Data 29-120K,
pages 11-12, dated June 1994
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

TERMINAL SHIELDS

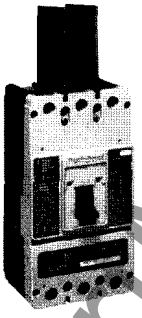


Terminal shields provide protection against accidental contact with live line side terminations. Terminal shields are fabricated from high dielectric insulating material and fasten over the front terminal access openings. Small openings in the shields provide limited access to the terminals for tightening connectors. (Field installation only.) Package of 10.

Ordering Information

CATALOG NUMBERS
TS33LN for use on 2- and 3-pole line side
TS34LN for use on 4-pole line side
TS33LD for use on 3-pole load side

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.) Package of 2.

Ordering Information

CATALOG NUMBER
IPB3

Westinghouse Series C K-Frame Termination Accessories

Cutler-Hammer
Westinghouse &
Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.

April 1995

Cutler-Hammer
Westinghouse &
Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
Supersedes Frame Book 29-103, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® K-Frame Accessories

GENERAL INFORMATION

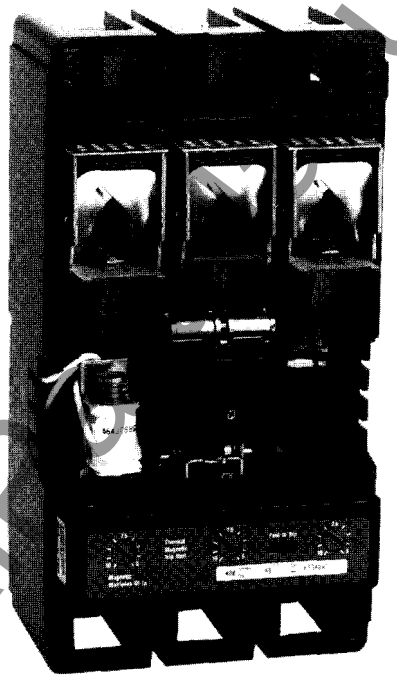
All internal accessories are of the plug-in type and are listed for field installation under UL File E64983.① Internal accessories for sealed circuit breakers are listed under UL File E7819 for factory installation only. The available plug-in accessories include the following:

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

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 rear 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.

Cover design permits field installation of external accessories such as key interlocks, padlockable handle lock hasp, and electrical or manual handle operations without modifying the cover.

To identify allowable accessory installation combinations, see page 14.



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

① Some UL listings pending; refer to Cutler-Hammer.

Series C K-Frame Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

Termination Accessories	Reference Page	2-Pole① Lt.	2-Pole① Rt.	3-Pole Lt.	3-Pole Ctr.	3-Pole Rt.	4-Pole Lt.	4-Pole Ctr.	4-Pole Rt.	4-Pole Neu.
Line and Load Terminals	9	●			●			●		
Keeper Nut	10	●			●			●		
Terminal Adapter	10	●			●			●		
Control Wire Terminal Kit	10	●			●			●		
Base Mounting Hardware	10	●			●			●		
Handle Extension	10	●			●			●		
Terminal Shields	11	●			●			●		
Interphase Barriers	11	●			●			●		
Internal Accessories (Only 1 Internal Accessory Per Pole)										
Alarm Lockout (Make/Break)	15		■		❑	❑	■			
Alarm Lockout (2Make/2Break)	15				❑	❑	■			
Auxiliary Switch (1A, 1B)	16		■		■	■	■		■	
Auxiliary Switch (2A, 2B)	16				■	■	■		■	
Auxiliary Switch (3A, 3B)	16				■	■	■		■	
Auxiliary Switch/Alarm Lockout	16				❑	❑	❑		❑	
Shunt Trip–Standard	17		■		■	■	■		■	
Shunt Trip–Low Energy	18				■	■	■			
Undervoltage Release Mechanism	19		■		■	■	■			
External Accessories										
Non-Padlockable Handle Block	21	■			■			■		
Padlockable Handle Block	21				■					
Padlockable Handle Lock Hasp	21		■	❑		❑	❑		❑	
Cylinder Lock	21	❑	❑	❑		❑				
Key Interlock Kit	22	■	❑	❑		❑	❑		❑	
Sliding Bar Interlock–Requires 2 Breakers	22				●					
Walking Beam Interlock–Requires 2 Breakers	22				●			●		
Electrical (Solenoid) Operator	23				●			●		
IQ Energy Sentinel	23				●					
Plug-In Adapters	24	●			●			●		
Rear Connecting Studs	24	●			●			●		
Panelboard Connecting Straps	25	●			●			●		
Handle Mechanism	27				●			●		
Door Hardware/Accessories	29				●			●		
Solid-State (Electronic) Portable Test Kit	7				●					
Modifications (Refer to Cutler-Hammer)										
Special Calibration	31	●			●			●		
Moisture Fungus Treatment	31	●			●			●		
Freeze-Tested Circuit Breakers	31	●			●			●		
Marine Application	31	●			●			●		

■ Applicable in indicated pole position ❑ May be mounted on left or right pole – not both ● Accessory available/Modification available
① 2-pole breaker supplied in 3-pole frame. Current carrying parts omitted from center pole.

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Printed in U.S.A.
June 1994

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June 1994
Supersedes Frame Book 29-103, pages 1-32,
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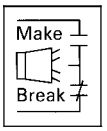
Series C® K-Frame Internal Accessories

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 (single pole double throw) 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.

Electrical Rating Data①②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	Dc	0.5③	
250	Dc	0.25③	

Ordering Information

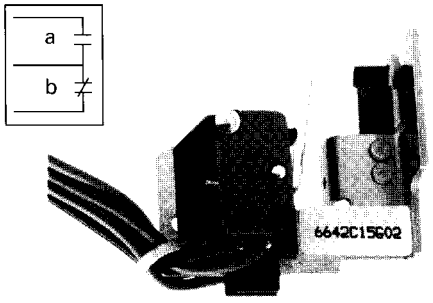
Alarm (Signal)/Lockout Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Factory Mounted				Field Mounted	
		Connection Type and Location				Field Installation Kits④	
		18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear⑤	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left	A1L3LA	A1L3LB	A1L3LC	A1L3LT	A1L3LPK	A1L3LTK
	Right⑤	A1L3RA	A1L3RB	A1L3RC	A1L3RT	A1L3RPK	A1L3RTK
2	Left	A2L3LA	A2L3LB	.....	A2L3LT	A2L3LPK	A2L3LTK
	Right⑤	A2L3RA	A2L3RB	.....	A2L3RT	A2L3RPK	A2L3RTK

① Endurance — 5,000 electrical operations plus 1,000 mechanical operations.
② Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc., for field installation under E64983.
⑤ Standard mounting location — leads exit rear of breaker.

Series C K-Frame Internal Accessories

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.

Electrical Rating Data①②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
600 125 250	50/60 Hz Dc Dc	6 0.5③ 0.25③	2500

Ordering Information

Auxiliary Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Factory Mounted				Field Mounted	
		Connection Type and Location				Field Installation Kits④	
		18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear⑤	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left Right⑤	A1X3LA A1X3RA	A1X3LB A1X3RB	A1X3LC A1X3RC	A1X3LT A1X3RT	A1X3PK A1X3PK	A1X3LTK A1X3RTK
2	Left Right⑤	A2X3LA A2X3RA	A2X3LB A2X3RB	....	A2X3LT A2X3RT	A2X3PK A2X3PK	A2X3LTK A2X3RTK
3	Left Right	A3X3LA A3X3RA	A3X3LB A3X3RB	....	A3X3LT A3X3RT	A3X3LPK A3X3RPK	A3X3LTK A3X3RTK

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)	Factory Mounted				Field Mounted	
		Connection Type and Location				Field Installation Kits④	
		18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear⑤	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left Right⑤	AAL3LA AAL3RA	AAL3LB AAL3RB	....	AAL3LT AAL3RT●	AAL3LPK AAL3RPK	AAL3LTK AAL3RTK●

① Endurance — 5,000 electrical operations plus 1,000 mechanical operations.
② Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc., for field installation under E64983.
⑤ Standard mounting location — leads exit rear of breaker.
⑥ For 4-pole circuit breakers, add a suffix F to catalog number.

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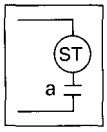
Series C® K-Frame Internal Accessories

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, are suitable for operation at 55 percent of rated voltage.

Electrical Rating Data①②③

50-60 Hz			Dc		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	8.4	45	12	8.4	35
24		200	24		170
48		830	48		710
60		1280	60		1105
110④	60	100	110	77	110
120④		120	120		130
127④		140	125		140
208④		420	...	..	....
220④		470	...	..	....
240④		550	...	..	....
380	266	95	220	154	41
400		108	250	..	54
415		120	...	..	....
440		136	...	..	....
480	336	40	...	..	....
525		50	...	..	....
550		50	...	..	....
600		70	...	..	....
9	6.3	80	...	..	....

Ordering Information

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. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

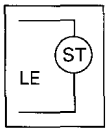
Shunt Trip

Voltage Rating (Ac Freq = 50/60 Hz)	Factory Mounted				Field Mounted	
	Connection Type and Location				Field Installation Kits⑤	
	18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear●	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole Mounting Ac/Dc Ratings⑥						
12-60 Vac or Vdc	SNT3LA05	SNT3LB05	SNT3LC05	SNT3T05	SNT3P05K	SNT3T05K
110-240 Vac or 110-125 Vdc ⑦	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 Ratings⑥						
12-60 Vac or Vdc	SNT3RA05	SNT3RB05	SNT3RC05	SNT3T05	SNT3P05K	SNT3T05K
110-240 Vac or 110-125 Vdc ⑦	SNT3RA11	SNT3RB11	SNT3RC11	SNT3T11	SNT3P11K	SNT3T11K
380-440 Vac or 220-250 Vdc	SNT3RA14	SNT3RB14	SNT3RC14	SNT3T14	SNT3P14K	SNT3T14K
480-600 Vac	SNT3RA18	SNT3RB18	SNT3RC18	SNT3T18	SNT3P18K	SNT3T18K

① Approximate unlatching time — 6 milliseconds.
② Approximate total circuit breaker contact opening time — 18 milliseconds.
③ Endurance — 5,000 electrical operations plus 1,000 mechanical operations.
④ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.
⑤ Listed with Underwriters Laboratories, Inc., for field installation under E64983.
⑥ Standard mounting location – leads exit rear of breaker.
⑦ Suitable for use with Class 1 ground fault sensing element.
⑥ For use with KT (thermal-magnetic) trip units only.

Series C K-Frame Internal Accessories

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 100 microfarad capacitor charged to 28 Vdc is discharged 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 resets open, the reset arm is actuated by the circuit breaker handle, 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. Cutoff provisions required in control circuit.

Ordering Information
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. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Low-Energy Shunt Trip①

Mounting Positions	**Factory Mounted**				**Field Mounted**	
	Connection Type and Location				Field Installation Kits②	
	18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear③	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole③ Right Pole④	LST3LA LST3RA	LST3LB LST3RB	LST3LC LST3RC	LST3LT LST3RT	LST3LPK LST3RPK	LST3LTK LST3RTK

● Cutoff provisions required in control circuit.
② Listed with Underwriters Laboratories, Inc., for field installation under E64983.
③ Standard mounting location – leads exit rear of breaker.
④ For use with KT (thermal-magnetic) trip units only.

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Printed in U.S.A.

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Supersedes Frame Book 29-103, pages 1-32,
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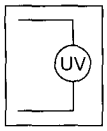
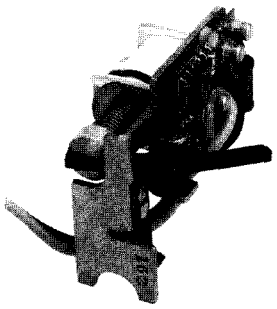
Series C® K-Frame Internal Accessories

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.

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.

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

Ordering Information

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. Performance data is shown on applicable circuit breaker accessory nameplates.

Electrical Rating Data ①

50/60 Hz					Dc				
Supply Voltage	Dropout Voltage		Pickup Voltage	VA	Supply Voltage	Dropout Voltage		Pickup Voltage	VA
	Min.	Max.	Max.			Min.	Max.	Max.	
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				1.6
120				2.1	120	44.5	77	93.5	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					

Undervoltage Release Mechanism

Voltage Rating (Ac Freq = 50/60 Hz)	Factory Mounted				Field Mounted	
	Connection Type and Location				Field Installation Kits②	
	18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear③	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole Mounting③ 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
Right Pole Mounting④ 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
Left Pole Mounting③ 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● 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 Vdc	UVH3RA28	UVH3RB28	UVH3RC28	UVH3RT28	UVH3RP28K	UVH3RT28K

① Endurance: 5,000 electrical operations plus 1,000 mechanical operations
② Listed with Underwriters Laboratories, Inc., for field installation under E64983.
③ Standard mounting location — leads exit rear of breaker.
④ For use with KT (thermal-magnetic) trip units only.

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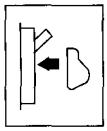
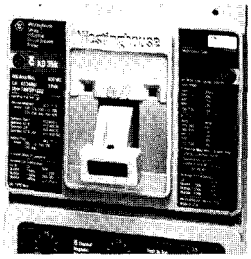
Series C® K-Frame External Accessories

NON-PADLOCKABLE HANDLE BLOCK



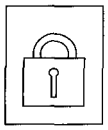


The nonlockable handle block secures the circuit breaker handle in either the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle block holds the circuit breaker handle in the ON position.) The device is positioned over the circuit breaker handle and secured by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

Ordering Information
One per circuit breaker.

CATALOG NUMBER
LKD3

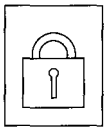
PADLOCKABLE HANDLE BLOCK

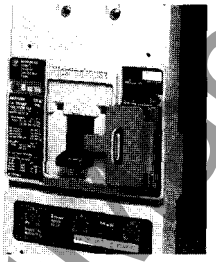


The device is positioned in the cover opening to prevent handle movement. Will accommodate one 5/16 padlock.

CATALOG NUMBER
PHB3

PADLOCKABLE HANDLE LOCK HASP①



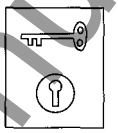


The padlockable handle lock hasp allows the handle to be locked in the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle lock holds the circuit breaker handle in the ON position.) The hasp mounts on the circuit breaker cover within the trimline. The cover is 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 1/4 inch (6mm) shackles. (Field installation only.)

Ordering Information
The padlockable handle lock hasp can be mounted on either side of the operating handle. One per circuit breaker. (Field installation only.)

CATALOG NUMBER
PLK3

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.)

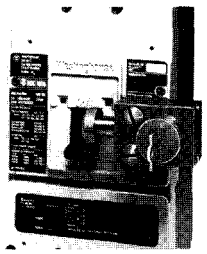
Ordering Information
The cylinder lock is factory installed in the left pole only of the circuit breaker cover. Internal accessories cannot be installed in the same pole as the cylinder lock.

CATALOG NUMBER
Order by Description

① Underwriters Laboratories, Inc., listing pending under UL File E7819.

Series C K-Frame External Accessories

KEY INTERLOCK KIT (Lock Not Included)



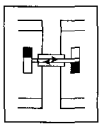
The key interlock is used to externally lock the circuit breaker handle in the OFF position. When the key interlock is locked, an extended deadbolt blocks movement of the circuit breaker handle. Uniquely coded keys are removable only with the deadbolt extended. Each coded key controls a group of circuit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

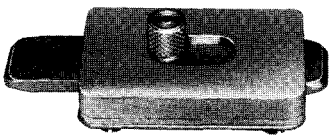
The key interlock assembly consists of a mounting kit and a purchaser supplied deadbolt lock. The mounting kit comprises a mounting plate, which is secured to the circuit breaker cover in either the left - or right-pole position; key interlock mounting hardware; and a wire seal. Specific mounting kits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

Ordering Information
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	B4003-1	3/8 inch	
Kirk	F	3/8 inch	
Square D	SF	None	KYK3
Federal Pioneer	VF	3/8 inch	
Castell	K or QK	3/8 inch	

SLIDING BAR INTERLOCK



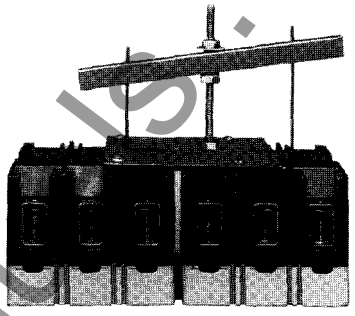


The sliding bar interlock provides mechanical interlocking between two adjacent 2- or 3-pole circuit breakers. It is installed on the enclosure cover between the circuit breakers. When the sliding bar interlock handle is moved from one side to the other, a bar extends to alternately block movement of 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.)

Ordering Information
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.)

CATALOG NUMBER
SBK3

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.

Ordering Information
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.

CATALOG NUMBER
WBL3

● Underwriters Laboratories, Inc., listing pending under UL File E7819.

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June 1994

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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
Supersedes Frame Book 29-103, pages 1-32,
dated January 1992
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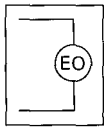
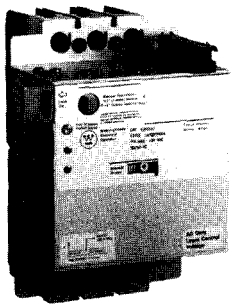
Series C® K-Frame External Accessories

ELECTRICAL (SOLENOID) OPERATOR





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 (80ms), 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 three padlock shackles with a maximum diameter of 1/4 inch (6mm). The table above provides electrical rating data for the electrical (solenoid) operator.

Electrical Rating Data ①②③④

Voltage⑤ (V)	Inrush Current (A)	Fuse (A)
120	24	6
240	12	4

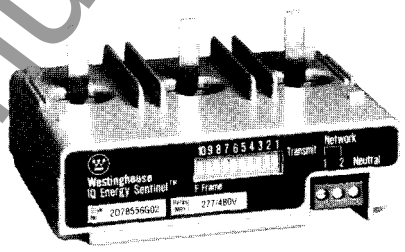
Ordering Information

Operating Voltage	Frequency	Terminal Block
		CATALOG NUMBERS
120 240	50/60 Hz	EOP3T07 EOP3T11
120 240	Dc	EOP3T07DC EOP3T11DC

- Underwriters Laboratories, Inc., listed under UL File E64983.
- The electrical operator design has been endurance tested for 6,000 electrical operations.
- Frequency: 50/60 Hz.

④ Maximum operating time: 5 cycles (80 ms).
⑤ Tolerance: +10%, –15% of nominal voltage.

IQ ENERGY SENTINEL



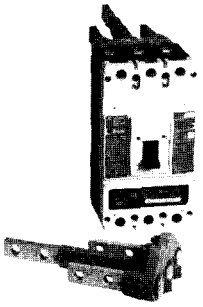
The IQ Energy Sentinel is a highly accurate, microprocessor-based, breaker-mounted device designed to monitor power and energy readings. It represents an alternative to watt meters, watt-hour meters, and watt demand meters. Key advantages include savings in space, lower installation costs, and remote monitoring capability.

The IQ Energy Sentinel mounts on the load side of a Westinghouse Series C K-frame (400 Amp) circuit breaker. It can be applied on three-phase, four-wire systems, or single-phase, three-wire systems with voltage connected through phases A and C.

For more information see Descriptive Bulletin 8178.

Series C K-Frame External Accessories

PLUG-IN ADAPTERS

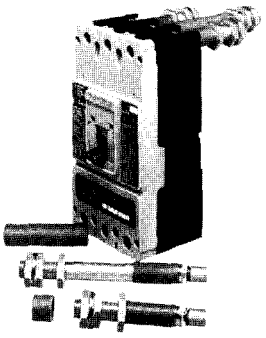


Plug-in adapters simplify installation and front removal of circuit breakers. Individual line and load plug-in adapters are available for rear connection applications on 2-, 3-, and 4-pole circuit breakers. Common mounting plates for line and load end adapters are available. The plug-in adapters are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

Ordering Information
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 installations only).

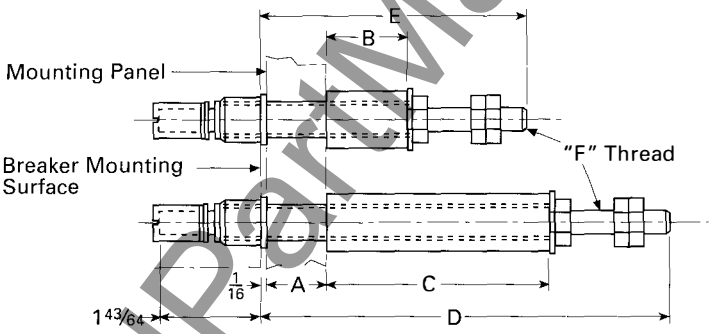
Continuous Current Rating (Amperes)	CATALOG NUMBERS		
	2-Pole	3-Pole	4-Pole
400	PAD32	PAD33	PAD34
Mounting Plate	①	PMP33	PMP34

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.

Ordering Information
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 available only with English thread sizes.



Stud Length	STUD STYLE NUMBER	Panel Thickness (Inches)	Tube Length (Inches)		STANDARD TUBE STYLE NUMBER	Dimensions (Inches)		
		A	B	C		D	E	F
400A Short	6642C14G02	3/4 to 1	27/32	....	313C909H17	....		
400A Short	6642C14G04	1/2 to 3/4	1 3/32	....	313C909H18	....	3 21/32	
400A Short	6642C14G06	1/4 to 1/2	1 11/32	....	313C909H19	....		3/4 - 16
400A Long	6642C14G03	3/4 to 1	....	3 25/32	313C909H20	....		
400A Long	6642C14G05	1/2 to 3/4	....	4 1/32	313C909H21	6 37/64		
400A Long	6642C14G07	1/4 to 1/2	....	4 9/32	313C909H22	....		

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

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June 1994
Supersedes Frame Book 29-103, pages 1-32,
dated January 1992
Mailed to: E, D, C/29-100A, 31-400A,
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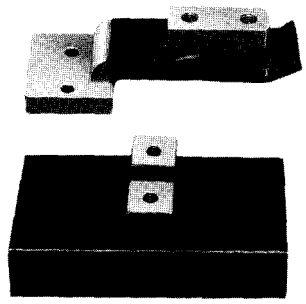
PANELBOARD CONNECTING STRAPS



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.)

Refer to panelboard manufacturer for compatibility.

Ordering Information
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.

Panelboard Connecting Straps

Bus Spacing (Inches)	Continuous Current Rating (Amperes)	Pole Connector Type	
		Center	Outside
		STYLE NUMBERS	
3½	400	4212B78G02	4212B77G01

Mounting Bracket

STYLE NUMBERS	
2-Pole	3-Pole
208B264H01	208B264H01

① Use 3-pole mounting plate for 2-pole circuit breaker.

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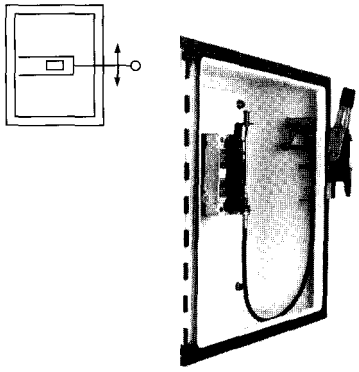
Series C® K-Frame External Accessories

FLEX SHAFT™ HANDLE MECHANISM



The Flex Shaft type handle mechanism is an extra heavy-duty handle mechanism designed for mounting in flange-type enclosures. An operating handle, flexible shaft, and mechanism are required for standard application.

The handle can be locked in the RESET position with up to three padlocks. The handle is suitable for NEMA 1, 3R, and 12 fabricated enclosures. It is supplied for mounting in right-hand flange enclosures. The handle fits the industry standard cutout.

Eight lengths of shafts are available for use with the wide range of depths of various enclosures (3 ft. through 10 ft.). These choices enable this mechanism to be mounted in various depth, width, and height enclosures.

Note: When selecting the length of shaft, ensure minimum bending radius of 4 inches is maintained to operate properly.

The standard method of shipment includes the mechanism preset at the factory; however, minor field adjustments may be required.

For this section, the term Circuit Breaker shall also include the molded case switch and Series C motor circuit protector (HMCP).

Ordering Information
Catalog Number includes complete assembly consisting of handle, flexible shaft, operating mechanism, and door interlock hardware to fit industry standard flange cutout.

Circuit Breaker	Length of Flex Shaft (in feet)	CATALOG NUMBER
K-Frame	3	F3S03
	4	F3S04
	5	F3S05
	6	F3S06
	7	F3S07
	8	F3S08
	9	F3S09
	10	F3S10

Note: NEMA 4/4X handle mechanisms are available. Add suffix X to complete catalog number

Accessories

Standard Door Hardware
(Required Adapter Kit Below)

CATALOG NUMBER	Latch	Panel Height
DH1R	2 point	Up to 30 in.
DH2R	2 point	Up to 40 in.
DH3R	3 point	Over 40 in.

Refer to page 29 for more information.

Door Hardware Adapter Kit
(Required on Standard Door Hardware)

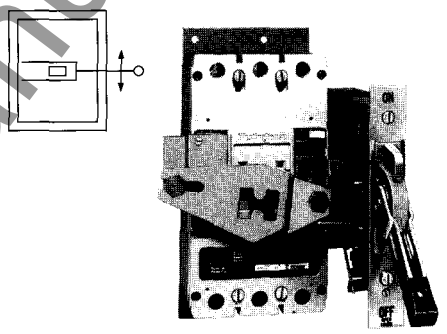
CATALOG NUMBER
AMTDHA

Refer to page 29 for more information.

Door Hardware for Hoffman A – 25 Enclosure
Kit consists of special door hardware and door interlock pin. Available for right hand flange mounting only.

CATALOG NUMBER	Latch	Panel Height
HDH-2R	2 point	Up to 40 in.
HDH-3R	3 point	Over 40 in.

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 application is also available. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of 3/8 inch (9.52mm).

Ordering information
Right-Hand Mounting Enclosure Cover

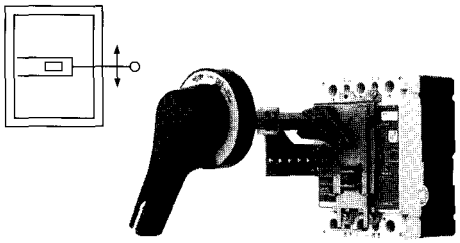
CATALOG NUMBER	
Hinged on Left	SM400KR

Left-Hand Mounting Enclosure Cover

CATALOG NUMBER	
Hinged on Right	SM400KL

Series C K-Frame External Accessories

SERIES C ROTARY HANDLE MECHANISM



The Westinghouse general purpose rotary handle mechanisms are suitable for use with NEMA 1, 3R, and 12 fabricated enclosures. They are designed for use with Series C K-Frame Circuit Breakers, Molded Case Switches, and Motor Circuit Protectors (HMCP).

Required for a standard application are the operating handle, shaft and mechanism.

The operating handle has been designed to meet NFPA 79 requirements. It may be mounted in either the horizontal or the vertical direction. The handle was ergonomically designed with extra clearance for a "gloved hand" to operate. It may be padlocked in the OFF position utilizing 3 padlocks.

The standard label on the operating handle indicates ON/Tripped/OFF/Reset. To fulfill international requirements, an alternate handle may be ordered which indicates (I)/Tripped(O)/Reset.

Ordering Information

Breaker Frame	Shaft Length (inches)	COMPLETE CATALOG NUMBER①	SEPARATE STYLE NUMBERS		
			Standard Handle②③	Breaker④ Mechanism	Shaft⑤
K	6	HM3R06	6648C22G01	6648C23G03	4217B37G04
	12	HM3R12	6648C22G01	6648C23G03	4217B37G01
	16	HM3R16	6648C22G01	6648C23G03	4217B37G02
	24	HM3R24	6648C22G01	6648C23G03	4217B37G03

Note: NEMA 4/4X handle mechanisms are available. Add suffix X to complete catalog number.

NEMA 4/4X handles are similar to standard handles except they include an internal neoprene gasket. Due to gasketing effect between the handle and the housing, the handle may not indicate a tripped position. To meet the various enclosure depths, three variable depth shafts are offered (12 in., 16 in., and 24 in.). Each shaft includes a support brace to ensure proper alignment. In addition, the 16 in. and 24 in. extra long shafts include an adjustable support bracket.

The standard mechanism located on the breaker does include means for internally locking the breaker in the "OFF" position with up to 3 padlocks each with a maximum diameter of .312 in.

Accessories

As an option, an auxiliary switch is offered so that the control panel builder may electrically indicate the status of the breaker. This accessory would be mounted on the mechanism and comes with 24 in. pigtail leads.

Microswitch

(Includes 24 in. pigtail leads)

STYLE NUMBER
5108A61G01

① Complete catalog number includes the standard handle, mechanism, shaft, and support brace/bracket.
② Handle is designed suitable for NEMA 1, 3R, and 12 enclosures.
③ The standard handle label indicates ON/Tripped/OFF/Reset.
④ Breaker mechanism includes a shaft support bracket and its parts.
⑤ Longer shafts (16 in. and 24 in.) include an adjustable support extension.

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June 1994

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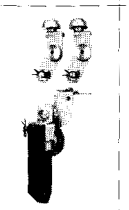
DOOR HARDWARE

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 hinge on right.

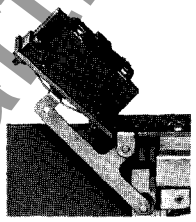
① Width spacer kits cannot be used with short rod at minimum enclosure depth.

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.

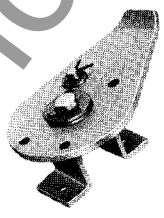
STYLE NUMBER
373D260G05

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.

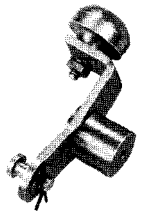


STYLE NUMBER
373D260G05

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

STYLE NUMBER	
Right- or Left-Hand Meeting	656D669G01

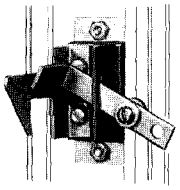
For Door Hardware Using Roller Latches

STYLE NUMBERS	
Right-Hand Meeting	370D801G04
Left-Hand Meeting	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

Door Hardware Kit

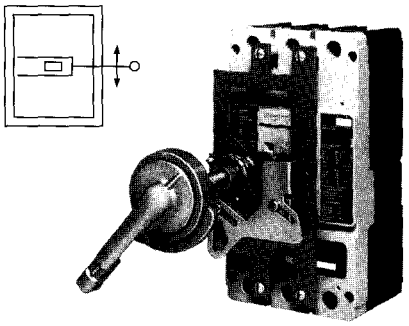


This adapter kit is for use with door hardware kits DH1R, DH2R, or DH3R for type SM handle mechanisms to permit the use and interlocking of right-hand installation of the type AMT handle mechanism (Below-the-Handle or Above-the-Handle type).

CATALOG NUMBER
AMTDHA

Series C K-Frame External Accessories

VARI-DEPTH HANDLE MECHANISM①



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 $^{5}/_{16}$ inch (7.94mm).

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.

STYLE NUMBER	
Standard Finish	504C323G01

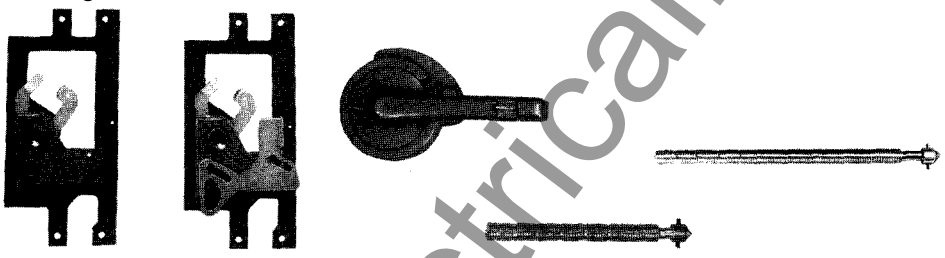
Handle Kits: These kits are for use with NEMA 4, 7, and 9 cast enclosures. The kits include a special operating handle, mounting bolts, and an adapter bushing. (The bushing may be purchased separately.) Kits may be used with standard mechanisms and shafts as required.

STYLE NUMBER	
NEMA 4 and 9 Kit	314C794G10

STYLE NUMBER	
NEMA 7 Kit	314C794G09

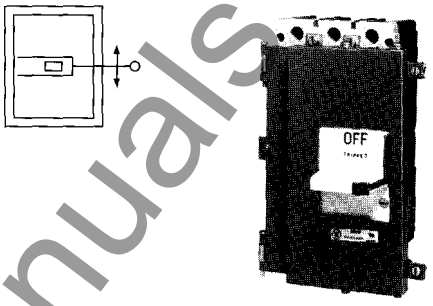
STYLE NUMBER	
Adapter Bushing Only	314C794G04

Ordering Information②



Mechanisms③④		Handle	Shaft			
Standard – (No Internal Lockoff)	Special – (With Internal Lockoff)	NEMA 1, 3R, 12 (With Hardware)	Standard		Long	
STYLE NUMBERS			STYLE NUMBER	Panel Depth	STYLE NUMBER	Panel Depth
5092A62G01	5092A62G02	504C323G03	47A4446G36	$5^{7}/_{8}$-$11^{1}/_{8}$	47A4446G37	$11^{1}/_{8}$-$14^{7}/_{8}$

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 $^{3}/_{8}$ inch (7.92mm). UL File E56845.

Ordering Information

For use with NEMA 1 Enclosure Catalog.

CATALOG NUMBER
SMCU400KD

For use with NEMA 12 Enclosure Catalog.

CATALOG NUMBER
CMCU400KD

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 connect studs are used, refer to Cutler-Hammer.
③ Includes hardware.
④ Outline and drilling plan reference: Drawing 653D270.

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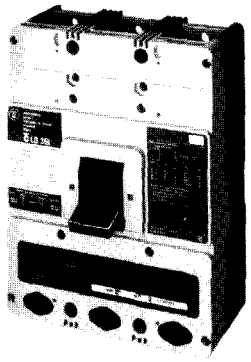
March 1995
Supersedes Selection Data 29-120L,
pages 1-2, dated June 1994
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Westinghouse Series C® Molded Case Circuit Breakers L-Frame 300-600 Amperes



Dimensions, Inches (mm)

No. of Poles	Width	Height	Depth
2, 3	8.25 (210)	10.75 (274)	4.062 (103)
4	11 (279)	10.75 (274)	4.062 (103)

Approximate Shipping Weight, Lbs. (kg)

Breaker Type	Complete Breaker			Frame Only			Trip Unit		
	Number of Poles								
	2	3	4	2	3	4	2	3	4
LD, HLD, LDC	15 (6.804)	16 (7.258)	25 (11.340)	12 (5.443)	12 (5.443)	20 (9.072)	3 (1.361)	4 (1.814)	5 (2.268)
LDB	15 (6.804)	16 (7.258)	25 (11.340)	...	...	...	...	...	...

INTERRUPTING CAPACITY RATINGS

UL489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity — RMS Symmetrical Amperes (kA)						
		Volts Ac (50/60Hz)					Volts Dc	
		240	277	480	600	125	250①②	500
LDB	2, 3	65	...	35	25	...	22	...
LD, CLD	2, 3, 4	65	...	35	25	...	22	...
HLD, CHLD	2, 3, 4	100	...	65	35	...	25	...
LDC, CLDC	2, 3, 4	200	...	100	50	...	30	...
HLDDC	3	...	...	...	...	...	...	35

IEC 947-2 (P1) Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles		Interrupting Capacity (Symmetrical Amperes)			
			Volts Ac (50/60 Hz)			Volts Dc
			240	380/415	660	250
LDB	2, 3	I_{cu}	65	40	40	20
		I_{cs}	33	20	20	10
LD, CLD	2, 3, 4	I_{cu}	65	40	40	20
		I_{cs}	33	20	20	10
HLD, CHLD	2, 3, 4	I_{cu}	100	65	65	20
		I_{cs}	50	33	33	10
LDC, CLDC	2, 3, 4	I_{cu}	200	100	100	20
		I_{cs}	100	50	50	10

① L/R=8 milliseconds minimum
② 2-pole circuit breaker or two poles of 3-pole circuit breaker. Incorporating T/M trip unit only.

STANDARDS

Series C molded case circuit breakers are designed to conform with the following standards:

- Australian Standard AS 2184, Molded 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 947-2, Circuit Breakers
- Japanese T-Mark Standard, 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 Molded Case Circuit Breakers
- Swiss Electro-Technical Association Standard SEV 947-2, Safety Regulations for Circuit Breakers
- Underwriters Laboratories, Inc., Standard UL489, Molded Case Circuit Breakers and Circuit Breaker Enclosures, including Marine Circuit Breakers File E7819
- 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 Switchgear and Control Gear, Circuit Breakers

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Series C molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

Westinghouse Series C Molded Case Circuit Breakers, L-Frame, 300-600 Amperes

CATALOG NUMBERING SYSTEMS

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame Catalog Numbers

LD	3	600	F
Circuit Breaker/ Frame Type	Number of Poles	Circuit Breaker/ Frame Ampere Rating	Suffix

LDB	2: 2 Poles	300	C: Copper Terminals
LD	3: 3 Poles	350	F: Frame Only
HLD	4: 4 Poles	400	K: High Magnetic Molded Case Switch
LDC		450	V: 50°C (Thermal-Magnetic Trip Units Only)
CLD		500	W: Without Terminals
CHLD		600	X: Load Side Terminals Only
CLDC			Y: Line Side Terminals Only
HLDDC			

Thermal-Magnetic Trip Unit Catalog Numbers

LT	3	400	T
Trip Unit Type	Number of Poles	Trip Unit/ Rating Plug Ampere Rating	Suffix

LT: Thermal-Magnetic	2: 2 Poles	300	T:	Trip Unit Thermal-Magnetic Fixed Thermal Adjustable Magnetic
	3: 3 Poles	350		
	4: 4 Poles	400		
		450		
		500	V:	50°C Calibration (Thermal-Magnetic Trip Units Only)
		600		

Digitrip RMS 310 Trip Unit Catalog Numbers

LES	3	600	LS	P
Trip Unit Type	Number of Poles	Trip Unit Ampere Rating	Suffix	Suffix

LES: Electronic	3: 3 Poles	600	LS	100% Protected Neutral on 4-Pole Trip Unit
	4: 4 Poles		LSI	
			LSG	
			LSIG	

L-FRAME DIGITRIP SELECTION GUIDE

Trip Unit Type	Digitrip RMS 310	
RMS Sensing	Yes	
Breaker Type		
Ampere Range	300-600A	
Interrupting Rating @480V	35, 65, 100 kA	
100% Rated	Available	
Protection		
Ordering Options	LS, LSG	LSI, LSIG
Fixed Rating Plug (I_n)	Available	Available
Over Temperature Protection	Yes	Yes
Long Delay Protection		
Adjustable Rating Plug (I_n)	Available	Available
Long Delay Pick Up	0.5-1.0●	0.5-1.0①
Long Delay Time I^2t (6 I_n)	12 Secs.	12 Secs.
Long Delay Thermal Memory	Yes	Yes
Short Delay Protection		
Short Delay Pick Up	200-800%	200-800%
Short Delay Time I^2t	100ms	No
Short Delay Time Flat	No	Inst.-300ms
Instantaneous Protection		
Instantaneous Pick Up	No	200-800%
Instantaneous Override	Yes	Yes
Ground Fault Protection		
Ground Fault Pick Up	120A-600A	120A-600A
Ground Fault Delay Flat	Inst.-500ms	Inst.-500ms
Ground Fault Thermal Memory	Yes	Yes
Testing		
Field Testing	STK2 Test Kit	STK2 Test Kit

① Adjustable by rating plug.
Note: I_n = Rating Plug Rating

L-frame circuit breakers are available as individual components (Frame, Trip Unit, Terminals), or factory assembled complete breakers.

Further Information

Technical Data ..... TD 29-160
Dimensions ..... DS 29-170L
Time/Current Curves ..... AD 29-167L
Instantaneous Only Circuit Breakers (Motor Circuit Protector) ..... SD 29-120H

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Printed in U.S.A.
March 1995

Cutler-Hammer
Westinghouse &
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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
Supersedes Frame Book 29-104, pages 1-24,
dated November 1989
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® Molded Case Circuit Breakers L-Frame 300-600 Amperes

THERMAL-MAGNETIC CIRCUIT BREAKERS WITH INTERCHANGEABLE TRIP UNITS

Maximum Continuous Ampere Rating @ 40°C	**Standard Interrupting Capacity** 600 Vac Rated 35 kAIC @ 480 Vac		**High Interrupting Capacity** 600 Vac Rated 65 kAIC @ 480 Vac		**Ultra High Interrupting Capacity** 600 Vac Rated 100 kAIC @ 480 Vac		**Thermal-Magnetic Trip Unit Only** For Use With: Standard or High or Ultra High Interrupting Frames	**Standard Terminals Only** See Page 9 for Optional Terminals
	Factory Assembled Circuit Breaker Consisting of Frame, Trip Unit, and Terminals	Frame Only	Factory Assembled Circuit Breaker Consisting of Frame, Trip Unit, and Terminals	Frame Only	Factory Asssembled Circuit Breaker Consisting of Frame, Trip Unit, and Terminals	Frame Only		
	CATALOG NUMBERS							
2-Pole								
300	LD2300	LD2600F	HLD2300	HLD2600F	LDC2300	LDC2600F	LT2300T	TA602LD①
350	LD2350		HLD2350		LDC2350		LT2350T	TA602LD①
400	LD2400		HLD2400		LDC2400		LT2400T	TA602LD①
450	LD2450		HLD2450		LDC2450		LT2450T	TA602LD①
500	LD2500		HLD2500		LDC2500		LT2500T	TA602LD①
600	LD2600		HLD2600		LDC2600		LT2600T	2TA603LDK②
3-Pole								
300	LD3300	LD3600F	HLD3300	HLD3600F	LDC3300	LDC3600F	LT3300T	TA602LD①
350	LD3350		HLD3350		LDC3350		LT3350T	TA602LD①
400	LD3400		HLD3400		LDC3400		LT3400T	TA602LD①
450	LD3450		HLD3450		LDC3450		LT3450T	TA602LD①
500	LD3500		HLD3500		LDC3500		LT3500T	TA602LD①
600	LD3600		HLD3600		LDC3600		LT3600T	3TA603LDK②
4-Pole③								
300	LD4300	LD4600F	HLD4300	HLD4600F	LDC4300	LDC4600F	LT4300T	TA602LD①
350	LD4350		HLD4350		LDC4350		LT4350T	TA602LD①
400	LD4400		HLD4400		LDC4400		LT4400T	TA602LD①
450	LD4450		HLD4450		LDC4450		LT4450T	TA602LD①
500	LD4500		HLD4500		LDC4500		LT4500T	TA602LD①
600	LD4600		HLD4600		LDC4600		LT4600T	4TA603LDK②

① Individually packed.
● 2TA603LDK, 3TA603LDK, and 4TA603LDK terminal kits contain one terminal for each pole and one terminal cover.
● Neutral is in right pole.

Series C Molded Case Circuit Breakers, L-Frame, 300-600 Amperes

ELECTRONIC CIRCUIT BREAKERS WITH INTERCHANGEABLE TYPE LES DIGITRIP UNITS

Order as individual components: Breaker Frame, Trip Unit, Rating Plug, Terminals

Max. Continuous Ampere Rating @40°C①	**Circuit Breaker Frame Only**			**Digitrip RMS 310 Trip Unit Only●**				**Digitrip RMS 310 Rating Plug Only**			**Standard Terminals Only**
	Standard Interrupting Capacity 600 Vac Rated 35 kAIC @ 480 Vac	High Interrupting Capacity 600 Vac Rated 65 kAIC @ 480 Vac	Ultra High Interrupting Capacity 600 Vac Rated 100 kAIC @ 480 Vac	Standard Adjustable Short Time Delay with I^2t Short Delay Ramp	Options: Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Delay and Ground Fault Protection	Ampere Rating	Fixed Rating Plugs	Adjustable Rating Plugs Ampere Rating Catalog Number	See Page 9 for Optional Terminals
	CATALOG NUMBERS										
3-Pole③											
600	LD3600F	HLD3600F	LDC3600F	LES3600LS	LES3600LSI	LES3600LSG	LES3600LSIG	300	6LES300T	300/400/500/600 A6LES600T1	TA602LD④
								350	6LES350T		TA602LD④
								400	6LES400T		TA602LD④
								500	6LES500T		TA602LD④
								600	6LES600T		3TA603LDK⑤
4-Pole⑥											
600	LD4600F	HLD4600F	LDC4600F	LES4600LS	LES4600LSI	.....	.....	300	6LES300T	300/400/500/600 A6LES600T1	TA602LD④
								350	6LES350T		TA602LD④
								400	6LES400T		TA602LD④
								500	6LES500T		TA602LD④
								600	6LES600T		4TA603LDK⑤

① Ampere rating is established by rating plug.
② For ac use only.
③ 3-pole LES Trip Units are for use in 3-pole frames only.
④ Individually packed.
⑤ 3TA603LDK and 4TA603LDK terminal kits contain one terminal for each pole and one terminal cover.
⑤ Trip unit includes unprotected right neutral pole. For 100% protected right pole neutral add "P" to catalog number, i.e., LES4600LSP.

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Printed in U.S.A.
June 1994

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June 1994
Supersedes Frame Book 29-104, pages 1-24,
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31-500A

Series C® Molded Case Circuit Breakers L-Frame 300-600 Amperes

FACTORY SEALED CIRCUIT BREAKERS WITH NON-INTERCHANGEABLE THERMAL-MAGNETIC TRIP UNITS SUITABLE FOR REVERSE FEED USE

Maximum Continuous Ampere Rating @ 40°C	**600 Vac Rated, 250 Vdc**	
	Complete Circuit Breaker	
	Without Line and Load Terminals	With Standard Line and Load Terminals
	CATALOG NUMBERS	
2-Pole		
300	LDB2300W	LDB2300
350	LDB2350W	LDB2350
400	LDB2400W	LDB2400
450	LDB2450W	LDB2450
500	LDB2500W	LDB2500
600	LDB2600W	LDB2600
3-Pole		
300	LDB3300W	LDB3300
350	LDB3350W	LDB3350
400	LDB3400W	LDB3400
450	LDB3450W	LDB3450
500	LDB3500W	LDB3500
600	LDB3600W	LDB3600

Series C Molded Case Circuit Breakers, L-Frame, 300-600 Amperes

MOLDED CASE SWITCHES

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.

Maximum Continuous Ampere Rating @ 40°C	**600 Vac Maximum, 250 Vdc** Circuit Breaker Only Without Line and Load Terminals CATALOG NUMBERS	**Standard Terminals Only** See Page 9 for Optional Terminals
2-Pole		
600	LD2600WK	2TA603LDK①
3-Pole		
600	LD3600WK	3TA603LDK①
4-Pole		
600	LD4600WK	4TA603LDK①

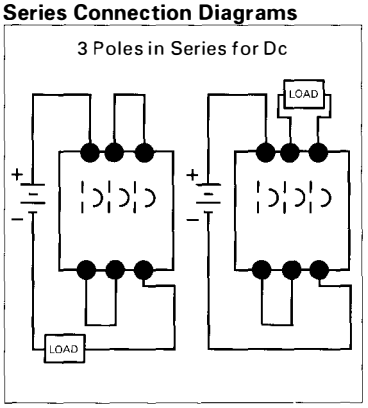
CIRCUIT BREAKERS FOR DC APPLICATIONS

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.

Order as individual components: Breaker Frame, Trip Unit, Rating Plug, Terminals

Maximum Continuous Ampere Rating @ 40°C	**Circuit Breaker Frame Only**② **High Interrupting Capacity** 35 kAIC @ 500 Vdc	**Thermal-Magnetic Trip Unit Only**	**Standard Terminals Only** See Page 9 for Optional Terminals
3-Pole			
300	HLDDC3600F	LT3300T	TA602LD③
350		LT3350T	TA602LD③
400		LT3400T	TA602LD③
450		LT3450T	TA602LD③
500		LT3500T	TA602LD③
600		LT3600T	3TA603LDK①

Series Connection Diagrams



① 2TA603LDK, 3TA603LDK, and 4TA603LDK terminal kits contain one terminal for each pole and one terminal cover.
② For use with thermal-magnetic trip units only.
③ Individually packed.

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Printed in U.S.A.

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Supersedes Frame Book 29-104, pages 1-24,
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Series C® Molded Case Circuit Breakers L-Frame 300-600 Amperes

100% RATED CIRCUIT BREAKERS

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90°C wire is applied at the 75°C ampacity. All 100% rated circuit breakers have electronic trip units.

Max. Continuous Ampere Rating @ 40°C	**Circuit Breaker Frame Only**			**Digitrip RMS 310 Trip Unit Only**				**Digitrip RMS 310 Rating Plug Only**			**Standard Terminals Only**
	Standard Interrupting Capacity 35 kAIC @ 480 Vac	High Interrupting Capacity 65 kAIC @ 480 Vac	Ultra High Interrupting Capacity 100 kAIC @ 480 Vac	Standard	Options			Ampere Rating	Fixed Rating Plugs	Adjustable Rating Plugs	See Page 9 for Optional Terminals
				Adjustable Short Time Delay with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay Ground Fault Protection	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Delay and Ground Fault Protection			Ampere Rating Catalog Number	
	CATALOG NUMBERS										
3-Pole											
600	CLD3600F	CHLD3600F	CLDC3600F	LES3600LS	LES3600LSI	LES3600LSG	LES3600LSIG	300	6LES300T	300/400/500/600	TA602LD①
								350	6LES350T	A6LES600T1	TA602LD①
								400	6LES400T		TA602LD①
								500	6LES500T		TA602LD①
								600	6LES600T		3TA603LDK②

SOLID-STATE (ELECTRONIC) PORTABLE TEST KIT

The solid-state (electronic) portable test kit provides verification of performance of all ratings of electronic 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.

Ordering Information

CATALOG NUMBER
STK2

① Individually packed.
② 3TA603LDK terminal kit contains one terminal for each pole and one terminal cover.

Series C Molded Case Circuit Breakers, L-Frame, 300-600 Amperes

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Series C® L-Frame Termination Accessories

LINE AND LOAD TERMINALS

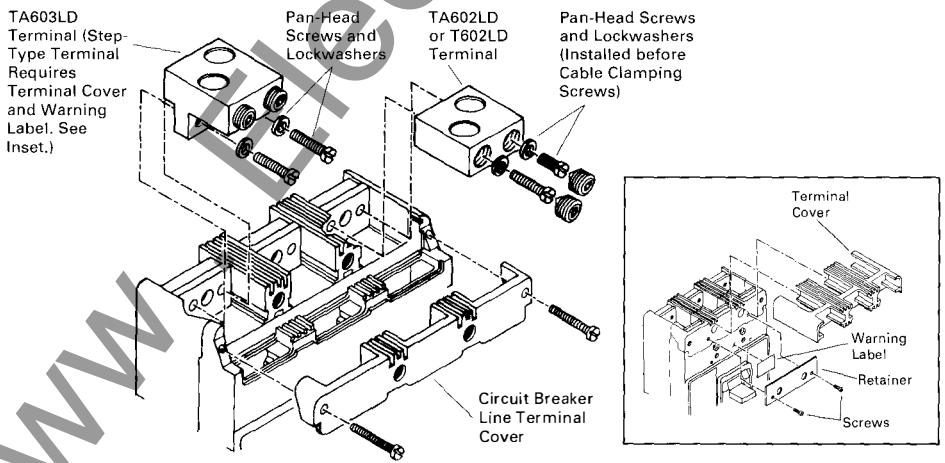
Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories, Inc. Standards UL486A and UL486B and CSA C22.2 No. 65M. Unless otherwise specified, L-frame circuit breaker line and load terminals are shipped separately for field installation.

The wire connecting terminal is secured with two pan-head, slotted screws and lock washers 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.) The circuit breaker line/load terminal conductors are positioned in the conductor holes in the wire connecting terminal and are secured with recessed socket screws which are tightened to the correct torque loading from the front of the circuit breaker.

Ordering Information
L-frame circuit breakers have Cu/Al terminals as standard equipment. When optional copper terminals are required, order by catalog number. Specify if factory installation is required.

Line and Load Terminal

Maximum Breaker Amps	Terminal Body Material	Wire Type	AWG Wire Range/No. Conductors	Metric Wire Range mm²	CATALOG NUMBERS
Standard Cu/Al Pressure Terminals					
400	Aluminum	Cu/Al	4/0-600 (1)	120-300	2TA401LDK-2 Pole Kit①
					3TA401LDK-3 Pole Kit①
					4TA401LDK-4 Pole Kit①
500	Aluminum	Cu/Al	250-350 (2)	120-150	TA602LD②
600	Aluminum	Cu/Al	400-500 (2)	185-240	2TA603LDK-2 Pole Kit●
					3TA603LDK-3 Pole Kit①
					4TA603LDK-4 Pole Kit①
Optional Copper Press Type Terminals					
600	Copper	Cu	250-350 (2)	120-150	T602LD②



① Terminal kits contain one terminal for each pole and one terminal cover.
② Individually packed.

KEEPER NUT

Not required on L-Frame. Terminal is threaded.

Series C L-Frame Termination Accessories

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.

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

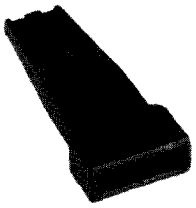
Imperial Thread

Number of Poles	Description	Type of Mounting	STYLE NUMBER
2, 3, 4	0.250-20 x 1.5 inch Filister-Head Steel Screws and Lockwashers and Flat Washers	Individual	21C6782G05

Metric Thread

Number of Poles	Description	Type of Mounting	STYLE NUMBER
2, 3		Individual	5103A09G01

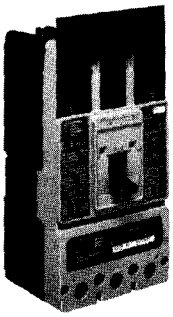
HANDLE EXTENSION



Not included with breaker. Must be purchased separately.

CATALOG NUMBER
HEX4

TERMINAL SHIELDS

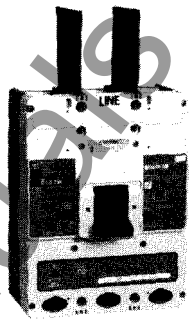


Terminal shields provide protection against accidental contact with live line side terminations. Terminal shields are fabricated from high dielectric insulating material and fasten over the front terminal access openings. Small openings in the shields provide limited access to the terminals for tightening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

Ordering Information

STYLE NUMBER
314C420G01

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.) Two per package.

Ordering Information

CATALOG NUMBER
IPB4

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June 1994
Supersedes Frame Book 29-104, pages 1-24,
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31-500A

Series C® L-Frame Accessories

GENERAL INFORMATION

All internal accessories are of the plug-in type and are listed for field installation under UL File E64983. Internal accessories for sealed circuit breakers are listed under UL File E7819 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

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 rear 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.

Cover design permits field installation of external accessories such as key interlocks, padlockable handle lock hasp, and electrical or manual handle operations without modifying the cover.

To identify allowable accessory installation combinations, see page 12.

Typical Internal Plug-in Accessory Installed in L-Frame Circuit Breaker

Series C L-Frame Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

	Reference	2-①, 3-Pole			4-Pole			
Termination Accessories	Page	Lt.	Ctr.	Rt.	Lt.	Ctr.	Rt.	Neu.②
Line and Load Terminals	9		●			●		
Base Mounting Hardware	10		●			●		
Handle Extension	10		●			●		
Terminal Shields	10		●			●		
Interphase Barriers	10		●			●		
Internal Accessories (Only 1 Internal Accessory Per Pole Maximum)								
Alarm Lockout (Make/Break)	13	■		■	■		■	
Alarm Lockout (2Make/2Break)	13	■		■	■		■	
Auxiliary Switch (1A, 1B)	14	■		■	■		■	
Auxiliary Switch (2A, 2B)	14	■		■	■		■	
Auxiliary Switch (3A, 3B)	14	■		■	■		■	
Auxiliary Switch (1A, 1B)/Alarm Lockout	14	■		■	■		■	
Auxiliary Switch (2A, 2B)/Alarm Lockout (Make/Break)	14	■		■	■		■	
Shunt Trip–Standard③	15	■		■	■		■	
Shunt Trip–Low Energy③	16	■		■	■		■	
Undervoltage Release Mechanism③	17	■		■	■		■	
External Accessories								
Non-Padlockable Handle Block	19		■			■		
Padlockable Handle Lock Hasp	19	❑		❑	❑		❑	
Key Interlock Kit	19	❑		❑	❑		❑	
Sliding Bar Interlock–Requires 2 Breakers	20		●			●		
Walking Beam Interlock–Requires 2 Breakers	20		●			●		
Electrical (Motor) Operator	21		●			●		
Plug-In Adapters	21		●			●		
Rear Connecting Studs	22		●			●		
Panelboard Connecting Straps	22		●			●		
Handle Mechanisms	23		●			●		
Door Hardware/Accessories	25		●			●		
Solid-State (Electronic) Portable Test Kit	7		●			●		
Modifications (Refer to Cutler-Hammer)								
Special Calibration	27		●			●		
Moisture Fungus Treatment	27		●			●		
Freeze-Tested Circuit Breakers	27		●			●		
Marine Application	27		●			●		

■ Applicable in indicated pole position ❑ May be mounted on left or right pole – not both ● Accessory available/Modification available

① 2-pole breaker supplied in 3-pole frame. Current carrying parts omitted from center pole.
② Refer to Cutler-Hammer for appropriate neutral pole accessory combinations.
③ Shunt trip and UVR cannot be mounted in right poles on LES trip units.

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Printed in U.S.A.
June 1994

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June 1994
Supersedes Frame Book 29-104, pages 1-24,
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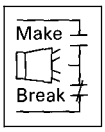
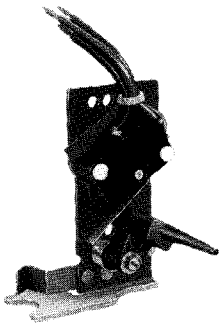
Series C® L-Frame Internal Accessories

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 (single-pole double-throw) 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.

Electrical Rating Data①②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	Dc	0.5③	
250	Dc	0.25③	

Ordering Information

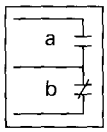
Alarm (Signal)/Lockout Switch

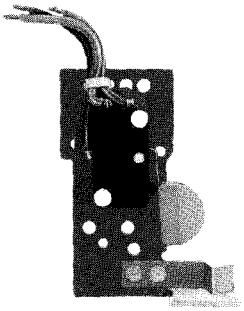
Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	**Factory Mounted**				**Field Mounted**	
		Connection Type and Location				Field Installation Kits④	
		18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear⑤	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left	A1L4LA	A1L4LB	A1L4LC	A1L4LT	A1L4LPK	A1L4LTK
	Right⑤	A1L4RA	A1L4RB	A1L4RC	A1L4RT	A1L4RPK	A1L4RTK
2	Left	A2L4LA	A2L4LB	.....	A2L4LT	A2L4LPK	A2L4LTK
	Right⑤	A2L4RA	A2L4RB	.....	A2L4RT	A2L4RPK	A2L4RTK

① Endurance — 5000 electrical operations plus 1000 mechanical operations.
● Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc. for field installation under E64983.
⑤ Standard mounting location — leads exit rear of breaker.

Series C L-Frame Internal Accessories

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.

Electrical Rating Data①②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	Dc	0.5③	
250	Dc	0.25③	

Ordering Information

Auxiliary Switch

Number of Contacts (A and B)	Mounting Location (Pole)	**Factory Mounted** Connection Type and Location				**Field Mounted** Field Installation Kits④	
		18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear⑤	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1	Left	A1X4LA	A1X4LB	A1X4LC	A1X4LT	A1X4PK	A1X4LTK
	Right⑤	A1X4RA	A1X4RB	A1X4RC	A1X4RT	A1X4PK	A1X4RTK
2	Left	A2X4LA	A2X4LB	A2X4LC	A2X4LT	A2X4PK	A2X4LTK
	Right⑤	A2X4RA	A2X4RB	A2X4RC	A2X4RT	A2X4PK	A2X4RTK
3	Left	A3X4LA	A3X4LB	A3X4LC	A3X4LT	A3X4PK	A3X4LTK
	Right⑤	A3X4RA	A3X4RB	A3X4RC	A3X4RT	A3X4PK	A3X4RTK

Auxiliary Switch-Alarm (Signal)/Lockout (ASL) Switch Combination
Each catalog number listed in the following table includes one or two auxiliary switches and one alarm switch. In an auxiliary switch ASL switch combination, the alarm 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	Mounting Location (Pole)	**Factory Mounted** Connection Type and Location				**Field Mounted** Field Installation Kits④	
		18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side	Rear⑤	Opposite Side	Same Side		
		CATALOG NUMBERS				CATALOG NUMBERS	
1A, 1B and 1 Make/1 Break	Left	AA114LA	AA114LB	.....	AA114LT	AA114LPK	AA114LTK
	Right⑤	AA114RA	AA114RB	.....	AA114RT	AA114RPK	AA114RTK
2A, 2B and 1 Make/1 Break	Left	AA214LA	AA214LB	.....	AA214LT	AA214LPK	AA214LTK
	Right⑤	AA214RA	AA214RB	.....	AA214RT	AA214RPK	AA214RTK
3A, 3B and 1 Make/1 Break	Left	AA314LA	AA314LB	.....	.....	AA314LPK	.....
	Right⑤	AA314RA	AA314RB	.....	.....	AA314RPK	.....

① Endurance — 5000 electrical operations plus 1000 mechanical operations.
② Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc. for field installation under E64983.
⑤ Standard mounting location — leads exit rear of breaker.

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Printed in U.S.A.
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June 1994
Supersedes Frame Book 29-104, pages 1-24,
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Mailed to: E, D, C/29-100A, 31-400A,
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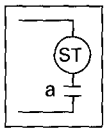
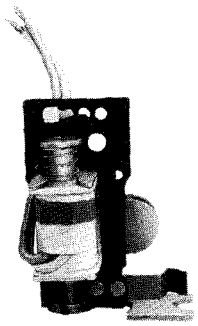
Series C® L-Frame Internal Accessories

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 at right, are suitable for operation at 55 percent of rated voltage.

Ordering Information

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. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Electrical Rating Data①②③

50-60 Hz			Dc		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	8.4	45	12	8.4	35
24		200	24		170
48	33.6	830	48	33.6	710
60		1280	60		1105
110④	60	100	110	77	110
120④		120	120		130
127④		140	125		140
208④		420	...	..	....
220④		470	...	..	....
240④		550	...	..	....
380	266	95	220	154	41
400		108	250	..	54
415		120	...	..	....
440		136	...	..	....
480	336	40	...	..	....
525		50	...	..	....
550		50	...	..	....
600		70	...	..	....

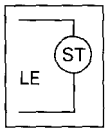
Shunt Trip

Voltage Rating (Ac Freq = 50/60 Hz)	Factory Mounted				Field Mounted	
	Connection Type and Location				Field Installation Kits⑤	
	18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear⑤	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole Mounting Ac/Dc Ratings⑥						
12-24 Vac 12-24 Vdc	SNT4LA03	SNT4LB03	SNT4LC03	SNT4LT03	SNT4LP03K	SNT4LT03K
48-60 Vac	SNT4LA05	SNT4LB05	SNT4LC05	SNT4LT05	SNT4LP05K	SNT4LT05K
48-60 Vdc	SNT4LA23	SNT4LB23	SNT4LC23	SNT4LT23	SNT4LP23K	SNT4LT23K
110-240 Vac	SNT4LA11	SNT4LB11	SNT4LC11	SNT4LT11	SNT4LP11K	SNT4LT11K
110-125 Vdc	SNT4LA26	SNT4LB26	SNT4LC26	SNT4LT26	SNT4LP26K	SNT4LT26K
380-440 Vac 220-250 Vdc	SNT4LA14	SNT4LB14	SNT4LC14	SNT4LT14	SNT4LP14K	SNT4LT14K
480-600 Vac	SNT4LA18	SNT4LB18	SNT4LC18	SNT4LT18	SNT4LP18K	SNT4LT18K
Right Pole Mounting Ac/Dc Ratings⑦						
12-24 Vac 12-24 Vdc	SNT4RA03	SNT4RB03	SNT4RC03	SNT4RT03	SNT4RP03K	SNT4RT03K
48-60 Vac	SNT4RA05	SNT4RB05	SNT4RC05	SNT4RT05	SNT4RP05K	SNT4RT05K
48-60 Vdc	SNT4RA23	SNT4RB23	SNT4RC23	SNT4RT23	SNT4RP23K	SNT4RT23K
110-240 Vac	SNT4RA11	SNT4RB11	SNT4RC11	SNT4RT11	SNT4RP11K	SNT4RT11K
110-125 Vdc	SNT4RA26	SNT4RB26	SNT4RC26	SNT4RT26	SNT4RP26K	SNT4RT26K
380-440 Vac 220-250 Vdc	SNT4RA14	SNT4RB14	SNT4RC14	SNT4RT14	SNT4RP14K	SNT4RT14K
480-600 Vac	SNT4RA18	SNT4RB18	SNT4RC18	SNT4RT18	SNT4RP18K	SNT4RT18K

● Approximate unlatching time — 6 milliseconds.
② Approximate total circuit breaker contact opening time — 18 milliseconds.
③ Endurance — 5000 electrical operations plus 1000 mechanical operations.
④ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.
⑤ Listed with Underwriters Laboratories, Inc. for field installation under E64983.
⑥ Standard mounting location – leads exit rear of breaker.
⑦ For use with LT (thermal-magnetic) trip units only.

Series C L-Frame Internal Accessories

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 100 microfarad capacitor charged to 28 Vdc is discharged 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 resets, the reset arm is actuated by the circuit breaker handle, 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. Cutoff provisions required in control circuit.

Ordering Information
Select shunt trip catalog number for the preferred mounting position. Shunt trip coils are designed to be applied at 28 dc. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Low Energy Shunt Trip①

Mounting Positions	**Factory Mounted**				**Field Mounted**	
	Connection Type and Location				Field Installation Kits②	
	18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear③	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole③ Right Pole④	LST4LA LST4RA	LST4LB LST4RB	LST4LC LST4RC	LST4LT LST4RT	LST4LPK LST4RPK	LST4LTK LST4RTK

① Cutoff provisions required in control circuit.
② Listed with Underwriters Laboratories, Inc. for field installation under E64983.
③ Standard mounting location – leads exit rear of breaker.
④ For use with LT (thermal-magnetic) trip units only.

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31-500A

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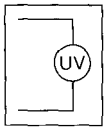
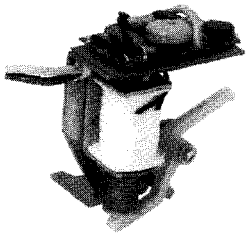
UNDERVOLTAGE RELEASE MECHANISM





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.

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.

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

Ordering Information

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. Performance data is shown on applicable circuit breaker accessory nameplates.

Electrical Rating Data ①

50/60 Hz					Dc				
Supply Voltage	Dropout Voltage		Pickup Voltage	VA	Supply Voltage	Dropout Voltage		Pickup Voltage	VA
	Min.	Max.	Max.			Min.	Max.	Max.	
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				1.6
120				2.1	120	44.5	77	93.5	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					

Undervoltage Release Mechanism

Voltage Rating (Ac Freq = 50/60 Hz)	Factory Mounted				Field Mounted	
	Connection Type and Location				Field Installation Kits②	
	18-inch Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
	Same Side	Rear③	Opposite Side	Same Side		
	CATALOG NUMBERS				CATALOG NUMBERS	
Left Pole Mounting③ Ac Ratings						
12 Vac	UVH4LA02	UVH4LB02	UVH4LC02	UVH4LT02	UVH4LP02K	UVH4LT02K
24 Vac	UVH4LA03	UVH4LB03	UVH4LC03	UVH4LT03	UVH4LP03K	UVH4LT03K
48-60 Vac	UVH4LA05	UVH4LB05	UVH4LC05	UVH4LT05	UVH4LP05K	UVH4LT05K
110-127 Vac	UVH4LA08	UVH4LB08	UVH4LC08	UVH4LT08	UVH4LP08K	UVH4LT08K
208-240 Vac	UVH4LA11	UVH4LB11	UVH4LC11	UVH4LT11	UVH4LP11K	UVH4LT11K
380-480 Vac	UVH4LA15	UVH4LB15	UVH4LC15	UVH4LT15	UVH4LP15K	UVH4LT15K
Right Pole Mounting④ Ac Ratings						
12 Vac	UVH4RA02	UVH4RB02	UVH4RC02	UVH4RT02	UVH4RP02K	UVH4RT02K
24 Vac	UVH4RA03	UVH4RB03	UVH4RC03	UVH4RT03	UVH4RP03K	UVH4RT03K
48-60 Vac	UVH4RA05	UVH4RB05	UVH4RC05	UVH4RT05	UVH4RP05K	UVH4RT05K
110-127 Vac	UVH4RA08	UVH4RB08	UVH4RC08	UVH4RT08	UVH4RP08K	UVH4RT08K
208-240 Vac	UVH4RA11	UVH4RB11	UVH4RC11	UVH4RT11	UVH4RP11K	UVH4RT11K
380-480 Vac	UVH4RA15	UVH4RB15	UVH4RC15	UVH4RT15	UVH4RP15K	UVH4RT15K
Left Pole Mounting③ Dc Ratings						
12 Vdc	UVH4LA20	UVH4LB20	UVH4LC20	UVH4LT20	UVH4LP20K	UVH4LT20K
24 Vdc	UVH4LA21	UVH4LB21	UVH4LC21	UVH4LT21	UVH4LP21K	UVH4LT21K
48-60 Vdc	UVH4LA23	UVH4LB23	UVH4LC23	UVH4LT23	UVH4LP23K	UVH4LT23K
110-125 Vdc	UVH4LA26	UVH4LB26	UVH4LC26	UVH4LT26	UVH4LP26K	UVH4LT26K
220-250 Vdc	UVH4LA28	UVH4LB28	UVH4LC28	UVH4LT28	UVH4LP28K	UVH4LT28K
Right Pole Mounting④ Dc Ratings						
12 Vdc	UVH4RA20	UVH4RB20	UVH4RC20	UVH4RT20	UVH4RP20K	UVH4RT20K
24 Vdc	UVH4RA21	UVH4RB21	UVH4RC21	UVH4RT21	UVH4RP21K	UVH4RT21K
48-60 Vdc	UVH4RA23	UVH4RB23	UVH4RC23	UVH4RT23	UVH4RP23K	UVH4RT23K
110-125 Vdc	UVH4RA26	UVH4RB26	UVH4RC26	UVH4RT26	UVH4RP26K	UVH4RT26K
220-250 Vdc	UVH4RA28	UVH4RB28	UVH4RC28	UVH4RT28	UVH4RP28K	UVH4RT28K

① Endurance: 5000 electrical operations plus 1000 mechanical operations
② Listed with Underwriters Laboratories, Inc. for field installation under E64983.
③ Standard mounting location — leads exit rear of breaker.
④ For use with LT (thermal-magnetic) trip units only.

Series C L-Frame Internal Accessories

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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.

June 1994

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Five Parkway Center
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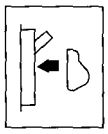
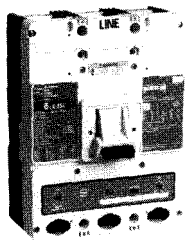
June 1994
Supersedes Frame Book 29-104, pages 1-24,
dated November 1989
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® L-Frame External Accessories

NON-PADLOCKABLE HANDLE BLOCK



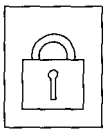


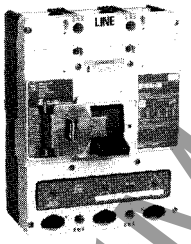
The nonlockable handle block secures the circuit breaker handle in either the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle block holds the circuit breaker handle in the ON position.) The device is positioned over the circuit breaker handle and secured by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

Ordering Information
One per circuit breaker.

CATALOG NUMBER
LDK4

PADLOCKABLE HANDLE LOCK HASP●





The standard 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 ¼ inch (6mm) shackles. (Field installation only.)

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

CATALOG NUMBERS	
Lock On/Off	HLKA
Lock Off Only (Left-Hand Mount)	HLK4LOFF
Lock Off Only (Right-Hand Mount)	HLK4ROFF

KEY INTERLOCK KIT (Lock Not Included)

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.)

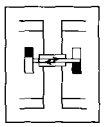
Ordering Information
Key interlock mounting kits are for field installation only. Select mounting kit catalog numbers to match type of lock used. Key interlocks are supplied by customer.

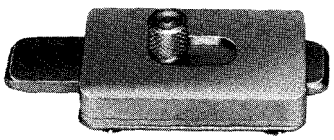
Lock Manufacturer	Lock Type	Bolt Projection in Withdrawn Position	KIT CAT. NO.
Superior	B4003-1	⅜ inch	
Kirk	F	⅜ inch	
Square D	SF	None	KYK4
Federal Pioneer	VF	⅜ inch	
Castell	K or QK	⅜ inch	CTK4

① Underwriters Laboratories, Inc. listing pending under UL File E7819.

Series C L-Frame External Accessories

SLIDING BAR INTERLOCK



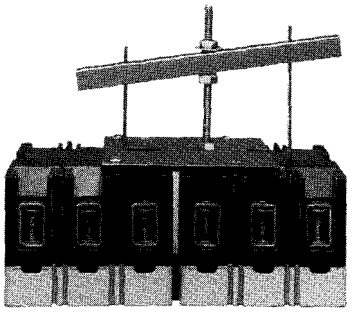


The sliding bar interlock provides mechanical interlocking between two adjacent 2- or 3-pole circuit breakers. It is installed on the enclosure cover between the circuit breakers. When the sliding bar interlock handle is moved from one side to the other, a bar extends to alternately block movement of 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.)

Ordering Information
The sliding bar interlock is available for mounting between two adjacent 2- or 3-pole circuit breakers with circuit breaker center line spacing at 8½ inches, and enclosure front panel thickness of ⅛ or 3⁄16 inches. (For field installation only.)

CATALOG NUMBER
SBK4

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.

Ordering Information
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.

CATALOG NUMBER
WBL4

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Printed in U.S.A.
June 1994

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June 1994
Supersedes Frame Book 29-104, pages 1-24,
dated November 1989
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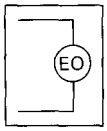
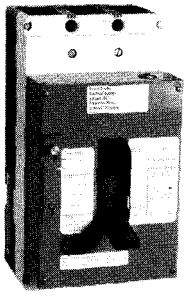
Series C® L-Frame External Accessories

ELECTRICAL (MOTOR) OPERATOR





The motor operator allows the circuits breaker to be opened, closed, or reset remotely. It also has a lock-off capability and provisions for manual operation.

The motor operator contains a reversible motor connected to a ball screw. The ball screw drives the circuit breaker handle. Limit switches and relays are used to control the motor.

Since the motor operator is equipped with control relays, only a momentary control signal is required to close or open the circuit breaker. Once an operation is initiated, the control relays seal in and the motor operator completes its operation. The relays carry the motor current. The control momentary switches only provide the signal.

The motor operator is UL listed as a recognized component suitable for field installation on all type L-frame circuit breakers and molded case switches under UL File E64124.

From the point of energization of the closing mechanism at 85% voltage, the closing time is 30 cycles ± 10%.

Electrical Rating Data ①②③④

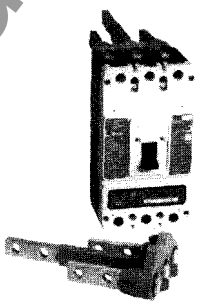
Voltage⑤ (V)		Inrush Current (A)
120	Ac	8
208		5
240		4
125	Dc	9
240		27

Ordering Information

Operating Voltage	Frequency	Terminal Block CATALOG NUMBERS
120	50/60 Hz	EOP4T07
208		EOP4T11
240		EOP4T11A
480		EOP4T15
125	Dc	EOP4T26
240		EOP4T21

① Underwriters Laboratories Inc. listed under UL File E64983.
② The electrical operator design has been endurance.
tested for 6,000 electrical operations.
③ Frequency: 50/60 Hz.
④ Maximum operating time: 5 cycles (80 ms).
⑤ Tolerance: +10%, –15% of nominal voltage.

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- and 3-pole circuit breakers. Common mounting plates for line and load end adapters are available. The plug-in adapters are rated 600A. (Field installation only.)

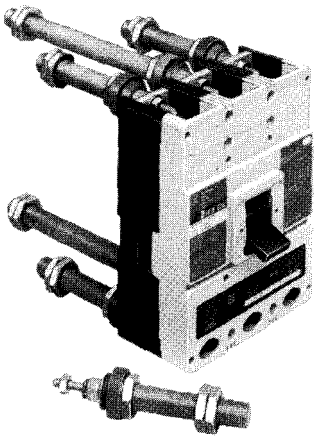
Ordering Information

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 installations only).

Continuous Current Rating (Amperes)	CATALOG NUMBERS		
	2-Pole	3-Pole	4-Pole
600	506C059G03	506C059G04	....
Mounting Plate	504C824H01	504C824H01	....

Series C L-Frame External Accessories

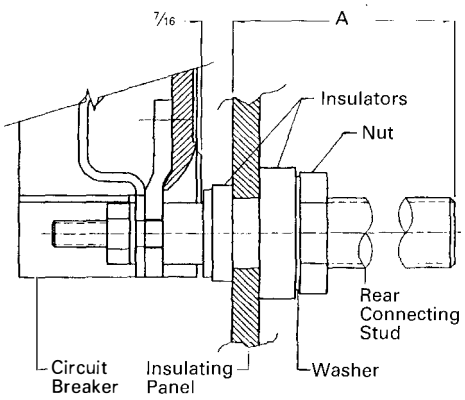
REAR CONNECTING STUDS①



Rear connecting studs are used to adapt breakers for switchboard and other rear connected applications. The studs bolt onto standard breakers without any modification. Breakers mounted in switchboards and other equipment are front removable by unscrewing the nuts that hold the studs to the breaker.

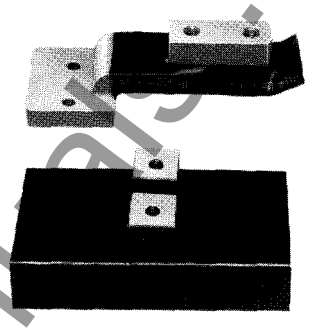
Note: These studs are designed to be used in insulated panels only.

This instruction leaflet (IL) gives detailed procedures to install the rear connecting studs.



STUD STYLE NUMBER	Stud Length A
314C960G07	$5\frac{15}{32}$
314C960G08	$7\frac{31}{32}$
314C960G09	$10\frac{15}{32}$

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 600A rating for outside and center poles. (Field installation only.)

Ordering Information
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.

Refer to panelboard manufacturer for compatibility.

Panelboard Connecting Straps

Continuous Current Rating (Amperes)	Pole Connector Type	
	Center	Outside
	STYLE NUMBERS	
600	624B609G01	506C052G01

Mounting Bracket

STYLE NUMBERS	
2-Pole	3-Pole
208B297H01	208B297H01

① Not UL listed.

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Printed in U.S.A.
June 1994

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Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
Supersedes Frame Book 29-104, pages 1-24,
dated November 1989
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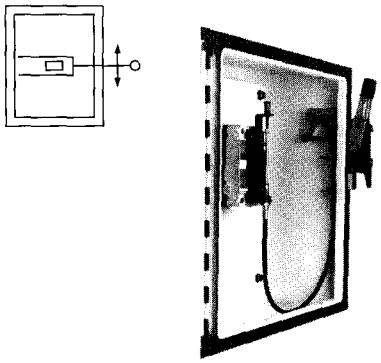
31-500A

Series C® L-Frame External Accessories

FLEX SHAFT™ HANDLE MECHANISM



The Flex Shaft type handle mechanism is an extra heavy-duty handle mechanism designed for mounting in flange-type enclosures. An operating handle, flexible shaft, and mechanism are required for standard application.

The handle can be locked in the RESET position with up to three padlocks. The handle is suitable for NEMA 1, 3R, 4, 4X, and 12 fabricated enclosures. It is supplied for mounting in right-hand flange enclosures but can be easily converted for left-hand mounting. The handle fits the industry standard cutout.

Three lengths of shafts are available for use with the wide range of depths of various enclosures (4 ft. through 6 ft.). These choices enable this mechanism to be mounted in various depth, width, and height enclosures. Note: when selecting the length of shaft, ensure minimum bending radius of 5 inches is maintained to operate properly.

The standard method of shipment includes the mechanism preset at the factory; however, minor field adjustments may be required.

For this publication, the term Circuit Breaker shall also include the molded case switch and Series C motor circuit protector (HMCP).

Ordering Information
Catalog Number includes complete assembly consisting of handle, flexible shaft, operating mechanism, and door interlock hardware to fit industry standard flange cutout.

Circuit Breaker	Length of Flex Shaft (in feet)	CATALOG NUMBERS
L-Frame	4	F4S04
	5	F4S05
	6	F4S06

Note: NEMA 4/4X handle mechanisms are available. Add suffix X to complete catalog number.

Accessories

Standard Door Hardware
(Required Adapter Kit Below)

CATALOG NUMBERS	Latch	Panel Height
DH1R	2 point	Up to 30 in.
DH2R	2 point	Up to 40 in.
DH3R	3 point	Over 40 in.

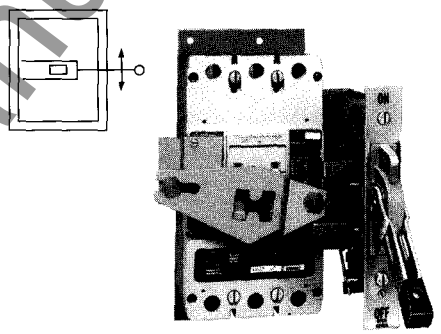
Door Hardware Adapter Kit
(Required on Standard Door Hardware)

CATALOG NUMBER
AMTDHA

Door Hardware for Hoffman A – 25 Enclosure
Kit consists of special door hardware and door interlock pin. Available for right-hand flange mounting only.

CATALOG NUMBERS	Latch	Panel Height
HDH-2R	2 point	Up to 40 in.
HDH-3R	3 point	Over 40 in.

TYPE SM SAFETY HANDLE MECHANISM①



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 application is also available. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of 3/8 inch (9.52mm).

Ordering Information
Right-Hand Mounting Enclosure Cover

CATALOG NUMBER	
Hinged on Left	SM600R

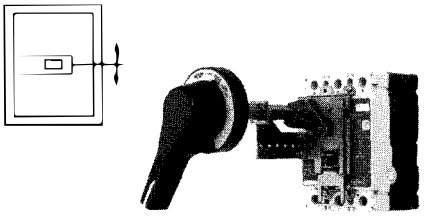
Left-Hand Mounting Enclosure Cover

CATALOG NUMBER	
Hinged on Right	SM600L

① Underwriters Laboratories Inc. listed under UL file 64983.

Series C L-Frame External Accessories

SERIES C ROTARY HANDLE MECHANISM



The Westinghouse general purpose Rotary handle mechanisms are suitable for use with NEMA 1, 3R, and 12 fabricated enclosures. They are designed for use with Series C – L Circuit Breakers, Molded Case Switches, and Motor Circuit Protectors (HMCP).

Required for a standard application are the operating handle, shaft and mechanism.

The operating handle has been designed to meet NFPA 79 requirements. It may be mounted in either the horizontal or the vertical direction. The handle was ergonomically designed with extra clearance for a "gloved hand" to operate. It may be padlocked in the OFF position utilizing up to 3 padlocks.

The standard label on the operating handle indicates ON/Tripped/OFF/Reset.

Ordering Information

Breaker Frame	Shaft Length (inches)	COMPLETE CATALOG NUMBERS①	SEPARATE STYLE NUMBERS		
			Standard Handle②③	Breaker④ Mechanism	Shaft⑤
L	6	HM4R6	6648C22G01	6608C02G01	4217B37G04
	12	HM4R12	6648C22G01	6608C02G01	4217B37G01
	16	HM4R16	6648C22G01	6608C02G01	4217B37G02
	24	HM4R24	6648C22G01	6608C02G01	4217B37G03

Note: NEMA 4/4X handle mechanisms are available. Add suffix X to complete catalog number.

To meet the various enclosure depths, four variable depth shafts are offered (6-in., 12-in., 16-in., and 24-in.). Each shaft includes a support brace to ensure proper alignment. In addition, the 16-in. and 24-in. extra long shafts include an adjustable support bracket.

The standard mechanism located on the breaker does include means for internally locking the breaker in the "OFF" position with up to 3 padlocks each with a maximum diameter of .312 in.

As an option, an auxiliary switch is offered so that the control panel builder may electrically indicate the status of the breaker. This accessory would be mounted on the mechanism and comes with 24-in. pigtail leads.

Accessories

Microswitch
(Includes 24-in. pigtail leads)

STYLE NUMBER
5108A61G01

① Complete catalog number includes the standard handle, mechanism, shaft, and support brace/bracket and hardware kit.
② Handle is designed suitable for NEMA 1, 3R, and 12 enclosures.
③ The standard handle label indicates ON/Tripped/OFF/Reset.
④ Breaker mechanism includes a shaft support bracket and its parts.
⑤ Longer shafts (16-in. and 24-in.) include an adjustable support extension.

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Printed in U.S.A.

June 1994

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Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
Supersedes Frame Book 29-104, pages 1-24,
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31-500A

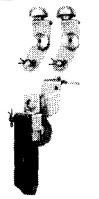
Series C® L-Frame External Accessories

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

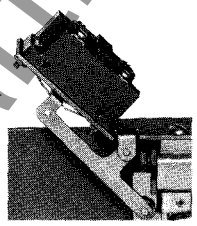
Note:
Right-hand enclosure cover hinged on left,
Left-hand enclosure cover hinge on right.

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.

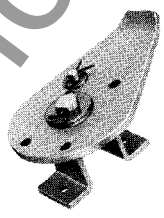
STYLE NUMBER
373D260G05

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.

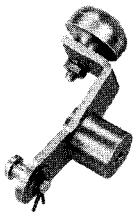


STYLE NUMBER
373D260G05

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

STYLE NUMBER	
Right- or Left-Hand Meeting	656D669G01

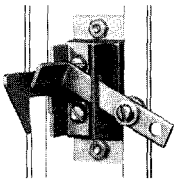
For Door Hardware Using Roller Latches

STYLE NUMBERS	
Right-Hand Meeting	370D801G04
Left-Hand Meeting	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

Door Hardware Kit

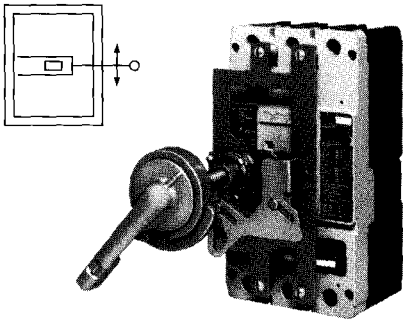


This adapter kit is for use with door hardware kits DH1R, DH2R, or DH3R for type SM handle mechanisms to permit the use and interlocking of right-hand installation of the type AMT handle mechanism (Below-the-Handle or Above-the-Handle type).

CATALOG NUMBER
AMTDHA

Series C L-Frame External Accessories

VARI-DEPTH HANDLE MECHANISM①



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 $^{5}/_{16}$ inch (7.94mm).

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.

STYLE NUMBER	
Standard Finish	504C323G01

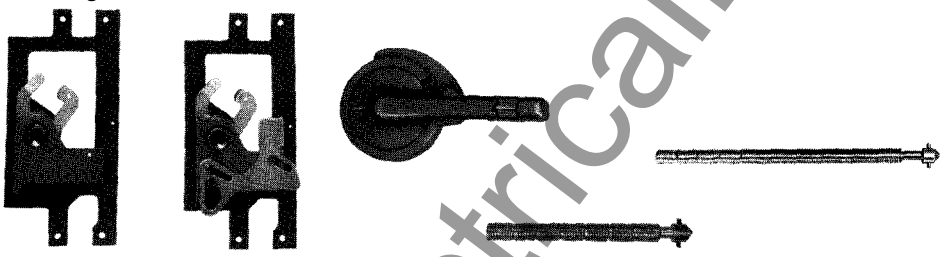
Handle Kits: These kits are for use with NEMA 4, 7, and 9 cast enclosures. The kits include a special operating handle, mounting bolts, and an adapter bushing. (The bushing may be purchased separately.) Kits may be used with standard mechanisms and shafts as required.

STYLE NUMBER	
NEMA 4 and 9 Kit	314C794G10

STYLE NUMBER	
NEMA 7 Kit	314C794G09

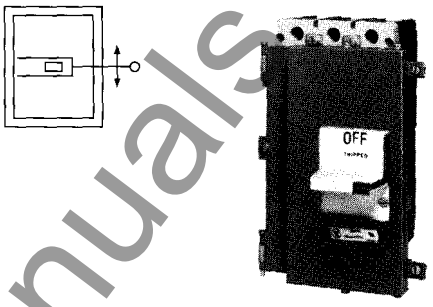
STYLE NUMBER	
Adapter Bushing Only	314C794G04

Ordering Information②



Mechanisms③④		Handle	Shaft			
Standard – (No Internal Lockoff)	Special – (With Internal Lockoff)	NEMA 1, 3R, 12 (With Hardware)	Standard		Long	
STYLE NUMBERS			STYLE NUMBER	Panel Depth	STYLE NUMBER	Panel Depth
5092A62G01	5092A62G02	504C323G03	47A4446G36	$5^{7}/_{8}$-$11^{1}/_{8}$	47A4446G37	$11^{1}/_{8}$-$14^{7}/_{8}$

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 $^{3}/_{8}$ inch (7.92mm). UL File E56845.

Ordering Information
For use with NEMA 1 Enclosure Catalog

CATALOG NUMBER
SMCU400KD

For use with NEMA 12 Enclosure Catalog

CATALOG NUMBER
CMCU400KD

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 connect studs are used, refer to Cutler-Hammer.
③ Includes hardware.
④ Outline and drilling plan reference: Drawing 653D270.

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Westinghouse &
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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
June 1994

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Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
Supersedes Frame Book 29-104, pages 1-24,
dated November 1989
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® L-Frame Modifications

SPECIAL CALIBRATION①

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.

See Application Data 29-160 for information regarding special conditions.

50°C Calibration①
Add suffix "V" to catalog number for complete breaker, listed above, when ordering listed ampere ratings for breakers to be used in 50°C ambients.

Order by description.
Refer to price list.

MOISTURE-FUNGUS TREATMENT

All series C circuit breaker cases are molded from glass-polyester which does not support the growth of fungus. Any parts which are susceptible to the growth of fungus will require special treatment.

Order by description.
Refer to price list.

FREEZE-TESTED CIRCUIT BREAKERS

The circuit breakers may be ordered with freeze testing. This option uses special lubrication and mechanical operation is verified at –40°C.

Order by description.
Refer to price list.

MARINE APPLICATION

L-frame circuit breakers can be supplied to meet the following marine specifications:
U.S. Coast Guard CFR 46
ABS – American Bureau of Shipping
IEEE 45

These specifications generally require molded case circuit breakers to be supplied with 50°C ambient calibration, special nameplating, and plug-in adaptor kits. When plug-in adaptor kits are used, no terminals need be supplied.

L-frame circuit breakers can also be supplied to meet UL489 Supplement SA (Marine Use) and UL489 Supplement SB (Naval Use).

UL489 Supplement SA applies to vessels over 65 feet in length. Requirements include 40°C ambient calibration, special labeling, and no use of aluminum conductors or terminals.

UL489 Supplement SB requires 50°C ambient calibration, vibration testings, special nameplating and no use of aluminum conductors or terminals.

Order by description.
Refer to Cutler-Hammer for pricing.

① Not listed with Underwriters Laboratories, Inc.

Series C L-Frame External Accessories

Cutler-Hammer
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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.

June 1994

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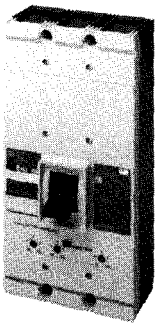
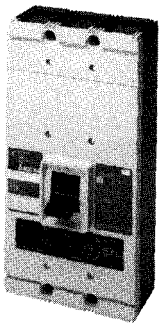
June 1994
New Information
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® Molded Case Circuit Breakers M-Frame 400-800 Amps



MD



MDS

Dimensions, Inches (mm)

Width	Height	Depth
8¼ (210)	16 (406)	4 1/16 (103)

Approximate Shipping Weight, Lbs. (kg)

Breaker Type	Complete Breaker		Frame Only		Trip Unit	
	Number of Poles					
	2	3	2	3	2	3
MD, MDY	37 (16.783)	44 (19.958)	33½ (15.195)	40 (18.144)	3½ (1.588)	4 (1.814)
MDS,MDSY	37	44	37	44	. . .	. . .
	(16.783)	(19.958)	(16.783)	(19.958)	. . .	. . .

INTERRUPTING CAPACITY RATINGS

UL489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes)			
		Volts Ac (50/60Hz)			Volts Dc
		240	480	600	250①②
MD	2, 3	42,000	35,000	22,000	20,000
MDS	2, 3	42,000	35,000	22,000	. . . . .
MDY		100,000	. . . . .	. . . . .	. . . . .
MDSY		100,000	. . . . .	. . . . .	. . . . .

STANDARDS

Series C molded case circuit breakers are designed to conform with the following standards:

- Australian Standard AS 2184, Molded 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, Circuit Breakers
- Japanese T-Mark Standard, 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 Molded Case Circuit Breakers
- Swiss Electro-Technical Association Standard SEV 157-1, Safety Regulations for Circuit Breakers
- Underwriters Laboratories, Inc., Standard UL 489, Molded Case Circuit Breakers and Circuit Breaker Enclosures, Including Marine Circuit Breakers File E7819
- 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

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Series C molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

① 2-pole circuit breaker or two outside poles of 3-pole circuit breaker.
● Time constant is 3 milliseconds minimum at 10kA and 8 milliseconds minimum at 22kA.

Series C Molded Case Circuit Breakers, M-Frame, 400-800 Amps

CATALOG NUMBERING SYSTEMS

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame Catalog Numbers

MDS	GAX	3	800	F
Basic Frame Type	Frame Mods	Number of Poles	Maximum Frame Rating	Suffix
MD—800A Ther/Mag MDS—800A Seltronic	A: Adjustable Short-Time Delay C: 100% Rated G: Ground Fault X: Without Neutral C.T. (with 2 point Term Block L1, L2) Y: 240V Maximum Rated	2: 2 Pole 3: 3 Pole	800: 800 Amp	F: Frame Only Without Trip or Rating Plug and Terminals K: Hi-Mag Molded Case Switch S: Saf-T Vue Cover V: 50°C Calibration Trip Unit (Thermal-Magnetic Only) W: Without Terminals X: With Standard Load Terminals Only Y: With Standard Line Terminals Only

Trip Unit Catalog Numbers

HMD	3	800	T
Trip Unit Type	Number of Poles	Trip Unit	Suffix
HMD: Thermal-Magnetic	2 3	400 450 500 600 700 800	V: 50°C Calibration (Thermal-Magnetic Trip Units Only) T: Thermal Magnetic Trip Unit Only

MDS circuit breakers are available as individual components (Frame, Rating Plug, Terminals).

MD circuit breakers are available as individual components (Frame Trip Unit, Terminals, or factory assembled complete breakers.

Further Information
Technical Data ..... TD 29-160
Dimensions ..... DS 29-170M
Time/Current Curves ..... AD 29-167M

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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
June 1994

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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

February 1995
Supersedes Selection Data 29-120M,
pages 3-4, dated June 1994
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Westinghouse Series C® Molded Case Circuit Breakers M-Frame 400-800 Amps

600-VOLT AC RATED

THERMAL-MAGNETIC CIRCUIT BREAKERS WITH INTERCHANGEABLE TRIP UNITS

Maximum Continuous Ampere Rating @ 40°C	**Standard Interrupting Capacity** 600 Vac Rated 35 kAIC @ 480 Vac		**Thermal-Magnetic Trip Unit Only**	**Standard Terminals Only**① See Page 7 for Optional Terminals
	Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals	Frame Only		
	CATALOG NUMBERS			
2-Pole				
400	MD2400	MD2800F	HMD2400T	TA700MA1
450	MD2450	MD2850F	HMD2450T	TA700MA1
500	MD2500	MD2800F	HMD2500T	TA700MA1
600	MD2600	MD2800F	HMD2600T	TA700MA1
700	MD2700	MD2800F	HMD2700T	TA700MA1
800	MD2800	MD2800F	HMD2800T	TA800MA2
3-Pole				
400	MD3400	MD3800F	HMD3400T	TA700MA1
450	MD3450	MD3850F	HMD3450T	TA700MA1
500	MD3500	MD3800F	HMD3500T	TA700MA1
600	MD3600	MD3800F	HMD3600T	TA700MA1
700	MD3700	MD3800F	HMD3700T	TA700MA1
800	MD3800	MD3800F	HMD3800T	TA800MA2

240-VOLT AC RATED

THERMAL-MAGNETIC CIRCUIT BREAKERS WITH INTERCHANGEABLE TRIP UNITS

Maximum Continuous Ampere Rating @ 40°C	**Standard Interrupting Capacity** 240 Vac Rated 100 kAIC @ 240 Vac		**Thermal-Magnetic Trip Unit Only**	**Standard Terminals Only**① See Page 7 for Optional Terminals
	Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals	Frame Only		
	CATALOG NUMBERS			
2-Pole				
400	MDY2400	MDY2800F	HMD2400T	TA700MA1
450	MDY2450	MDY2850F	HMD2450T	TA700MA1
500	MDY2500	MDY2800F	HMD2500T	TA700MA1
600	MDY2600	MDY2800F	HMD2600T	TA700MA1
700	MDY2700	MDY2800F	HMD2700T	TA700MA1
800	MDY2800	MDY2800F	HMD2800T	TA800MA2
3-Pole				
400	MDY3400	MDY3800F	HMD3400T	TA700MA1
450	MDY3450	MDY3850F	HMD3450T	TA700MA1
500	MDY3500	MDY3800F	HMD3500T	TA700MA1
600	MDY3600	MDY3800F	HMD3600T	TA700MA1
700	MDY3700	MDY3800F	HMD3700T	TA700MA1
800	MDY3800	MDY3800F	HMD3800T	TA800MA2

① Two terminals are required per pole.

Westinghouse Series C Molded Case Circuit Breakers, M-Frame, 400-800 Amps

600-VOLT AC RATED ELECTRONIC CIRCUIT BREAKER WITH INTERCHANGEABLE RATING PLUGS

Order as individual components: Breaker Frame, Rating Plug, Terminals

Maximum Continuous Ampere Rating @ 40°C	**Standard Interrupting Capacity, 600-Volt Ac Rated, 35 kAIC @ 480 Vac**						
	Frame Only				**Rating Plug Only**		**Standard Terminals Only**①
	Standard Frame	Optional Frames			Interchangeable		
	• Long Delay • Magnetic Trip	• Long Delay • Magnetic Trip • Adjustable Short Delay (.08 to 2.8 seconds)	• Long Delay • Magnetic Trip • Ground Fault Trip	• Long Delay • Magnetic Trip • Adjustable Short Delay • Ground Fault Trip	Fixed	Adjustable	See Page 7 for Optional Terminals
	CATALOG NUMBERS						
2-Pole							
400	MDS2800F	MDSA2800F	MDSG2800F	MDSGA2800F	8MC400	A8MC800	TA700MA1
500					8MC500	Adjustable	TA700MA1
600					8MC600	Settings Are:	TA700MA1
700					8MC700	400/500/600/	TA700MA1
800					8MC800	700/800	TA800MA2
3-Pole							
400	MDS3800F	MDSA3800F	MDSG3800F	MDSGA3800F	8MC400	A8MC800	TA700MA1
500					8MC500	Adjustable	TA700MA1
600					8MC600	Settings Are:	TA700MA1
700					8MC700	400/500/600/	TA700MA1
800					8MC800	700/800	TA800MA2

240-VOLT AC RATED ELECTRONIC CIRCUIT BREAKER WITH INTERCHANGEABLE RATING PLUGS

Order as individual components: Breaker Frame, Rating Plug, Terminals

Maximum Continuous Ampere Rating @ 40°C	**Standard Interrupting Capacity, 240-Volt Ac Rated, 100 kAIC @ 240 Vac**						
	Frame Only				**Rating Plug Only**		**Standard Terminals Only**①
	Standard Frame	Optional Frames			Interchangeable		
	• Long Delay • Magnetic Trip	• Long Delay • Magnetic Trip • Adjustable Short Delay (.08 to 2.8 seconds)	• Long Delay • Magnetic Trip • Ground Fault Trip	• Long Delay • Magnetic Trip • Adjustable Short Delay • Ground Fault Trip	Fixed	Adjustable	See Page 7 for Optional Terminals
	CATALOG NUMBERS						
2-Pole							
400	MDSY2800F	MDSYA2800F	MDSYG2800F	MDSYGA2800F	8MC400	A8MC800	TA700MA1
500					8MC500	Adjustable	TA700MA1
600					8MC600	Settings Are:	TA700MA1
700					8MC700	400/500/600/	TA700MA1
800					8MC800	700/800	TA800MA2
3-Pole							
400	MDSY3800F	MDSYA3800F	MDSYG3800F	MDSYGA3800F	8MC400	A8MC800	TA700MA1
500					8MC500	Adjustable	TA700MA1
600					8MC600	Settings Are:	TA700MA1
700					8MC700	400/500/600/	TA700MA1
800					8MC800	700/800	TA800MA2

● Two terminals are required per pole.

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Printed in U.S.A.
February 1995

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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
New Information
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® Molded Case Circuit Breakers M-Frame 400-800 Amps

600 VOLT AC RATED ELECTRONIC CIRCUIT BREAKER WITH INTERCHANGEABLE RATING PLUGS

Order as individual components: Breaker Frame, Rating Plug, Terminals

100% RATED CIRCUIT BREAKERS

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90°C wire is applied at the 75°C ampacity.

Maximum Continuous Ampere Rating @40°C	**Standard Interrupting Capacity, 600 Volt Ac Rated, 35 kAIC @ 480 Vac**						
	Frame Only				**Rating Plug Only**		**Standard Terminals Only①**
	Standard Frame	Optional Frames			Interchangeable		See Page 7 for Optional Terminals
	• Long Delay • Magnetic Trip	• Long Delay • Magnetic Trip • Adjustable Short Delay (.08 to 2.8 seconds)	• Long Delay • Magnetic Trip • Ground Fault Trip	• Long Delay • Magnetic Trip • Adjustable Short Delay • Ground Fault Trip	Fixed	Adjustable	
	CATALOG NUMBERS						
3-Pole							
400	MDSC3800F	MDSCA3800F	MDSCG3800F	MDSCGA3800F	8MC400	A8MC800	TA700MA1
500					8MC500	Adjustable	TA700MA1
600					8MC600	Settings Are:	TA700MA1
700					8MC700	400/500/600/	TA700MA1
800					8MC800	700/800	TA800MA2

MOLDED CASE SWITCHES

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 UL 1087.

Type MD and MDS Molded Case Switch Catalog Numbers

Maximum Continuous Ampere Rating @ 40°C	2-Pole	3-Pole
	CATALOG NUMBERS	
	Type MD – High Instantaneous (K)	
800	MD2800WK②	MD3800WK②
	Type MDS – High Instantaneous (K)	
800	MDS2800WK②	MDS3800WK②

For UL listed, series tested molded case switch application data, refer to Cutler-Hammer.

① Two terminals are required per pole.
② Shipped without line and load terminals. Order terminals separately from page 7.

Series C Molded Case Circuit Breakers, M-Frame, 400-800 Amps

SOLID-STATE (ELECTRONIC) PORTABLE TEST KIT

The solid-state (electronic) portable test kit provides verification of performance of all ratings of electronic 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.

Ordering Information

CATALOG NUMBER
STK2

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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
June 1994

Cutler-Hammer
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Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
New Information
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® M-Frame Termination Accessories

LINE AND LOAD TERMINALS

M-Frame circuit breakers use Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalog number. Specify if factory installation is required.

Line and Load Terminals

Maximum Breaker Amps	Terminal Body Material	Wire Type	AWG Wire Range/No. Conductors	CATALOG NUMBERS
Standard Cu/Al Pressure Terminals				
600	Aluminum	Cu/Al	(2) #1-500 MCM	TA700MA1
800	Aluminum	Cu/Al	(3) 3/0-400 MCM	TA800MA2
800	Aluminum	Cu/Al	(2) 500-700 MCM	TA801MA
Optional Copper and Cu/Al Pressure Type Terminals				
600	Copper	Cu	(2) 2/0-500 MCM	T600MA1
800	Copper	Cu	(3) 3/0-300 MCM	T800MA1

KEEPER NUT

Not required on M-Frame.
Terminal is threaded.

Series C M-Frame Termination Accessories

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.

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

Imperial Thread

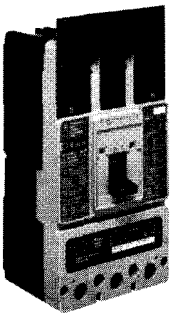
Number of Poles	Description	Type of Mounting	CATALOG NUMBER
2-, 3-Pole	0.3125-18 x 1.25 inch panhead steel screws, lock washers, and nuts	Individual	BMH5

HANDLE EXTENSION

Not included with breaker. Must be purchased separately.

STYLE NUMBER
1251C65G01

TERMINAL SHIELDS



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.)

STYLE NUMBER
208B966G01

Cutler-Hammer
Westinghouse &
Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.
June 1994

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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
New Information
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® M-Frame Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

	MD, MDY				MDS, MDSY			
	Reference Page	2-① and 3-Pole			Reference Page	2-① and 3-Pole		
Termination Accessories		Lt.	Ctr.	Rt.		Lt.	Ctr.	Rt.
Line and Load Terminals	7		●		7		●	
Base Mounting Hardware	8		●		8		●	
Handle Extension	8		●		8		●	
Terminal Shields	8		●		8		●	
Internal Accessories (Only 1 Internal Accessory Per Pole)								
Alarm Lockout (Make/Break)	11	*		*	15	*		*
Auxiliary Switch (1A, 1B)	12	■		■	16	■		■
Auxiliary Switch (2A, 2B)	12	■		■	16	■		■
Auxiliary Switch (3A, 3B)					16	■		■
Auxiliary Switch/Alarm Lockout	12	❑		❑	16	*		
Shunt Trip–Standard	13	■		■	17	■		■
Undervoltage Release Mechanism	14	■		■	18	*		*
External Accessories								
Non-Padlockable Handle Block	19		■		19		●	
Padlockable Handle Lock	19	❑		❑	19		●	
Key Interlock Kit	19	❑		❑	19		*	
Sliding Bar Interlock–Requires 2 Breakers	20		●		20		●	
Walking Beam Interlock–Requires 2 Breakers	20		*		20		*	
Electrical (Motor) Operator	20		●		20		●	
Plug-In Adapters	21		●		21		●	
Rear Connecting Studs	21		●		21		●	
Panelboard Connecting Straps	22		●		22		●	
Handle Mechanisms	23-27		●		23-27		●	
Door Hardware/Accessories	26		●		26		●	
Electronic Portable Test Kit	6				6		●	
Modifications (Refer to Cutler-Hammer)								
Special Calibration	29		●		29		●	
Moisture Fungus Treatment	29		●		29		●	
Freeze Tested Circuit Breakers	29		●		29		●	
Marine Application	29				29			

■ Applicable in indicated pole position
● Accessory available/Modification available
❑ May be mounted on left or right pole – not both
* Factory installed accessory

① 2-pole breaker supplied in 3-pole frame. Current carrying parts omitted from center pole.

Series C M-Frame Accessory Combinations

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Westinghouse &
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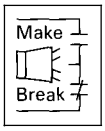
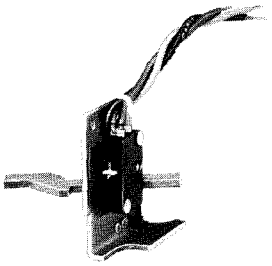
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
New Information
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® M-Frame Internal Accessories MD and MDY Only

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- or 3-pole circuit breakers, the alarm (signal)/lockout switch consists of one make or one break or make/break SPDT (single-pole double-throw) switch. 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.

Electrical Rating Data●②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	Dc	0.5③	
250	Dc	0.25③	

Ordering Information

Alarm (Signal)/Lockout Switch

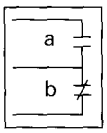
Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	**Factory Mounted**	**Field Mounted**	
		Connection Type and Location	Field Installation Kits④	
		18-inch Pigtail Leads	Pigtail Leads	Terminal Block
		Same Side●		
		CATALOG NUMBERS	CATALOG NUMBERS	
1M (Make)	Left⑤ Right	Order by Description	Factory Installation Only	
1B (Break)	Left⑤ Right			
1M/1B Make/Break	Left⑤ Right			

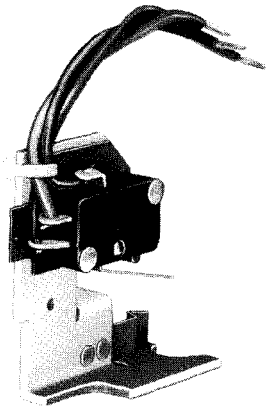
① Endurance — 5000 electrical operations plus 1000 mechanical operations.
② Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc. for factory installation.
⑤ Standard mounting location — leads exit side of breaker. MDS is left only.

EATON

Series C M-Frame Internal Accessories, MD and MDY Only

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 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.

Electrical Rating Data①②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	Dc	0.5③	
250	Dc	0.25③	

Ordering Information

Auxiliary Switch

Number of Sets of Contacts (1A and 1B)	Mounting Location (Pole)	**Factory Mounted** Connection Type and Location: 18-inch Pigtail Leads, Same Side⑤ — CATALOG NUMBERS	**Field Mounted** Field Installation Kits④: Pigtail Leads — CATALOG NUMBERS
1	Left⑤	Order by Description	458D013G12
	Right		458D013G05
2	Left⑤		458D013G13
	Right		458D013G06

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)	**Factory Mounted** Connection Type and Location: 18-inch Pigtail Leads, Same Side⑤ — CATALOG NUMBERS	**Field Mounted** Field Installation Kits④: Pigtail Leads / Terminal Block — CATALOG NUMBERS
1	Left⑤	Order by Description	Factory Installation Only

① Endurance — 5000 electrical operations plus 1000 mechanical operations.
② Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc. for field installation under E64983.
⑤ Standard mounting location — leads exit side of breaker.

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New Information
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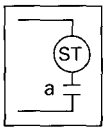
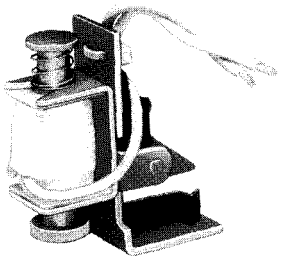
31-500A

Series C® M-Frame Internal Accessories MD and MDY Only

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. When required for ground fault protection applications, certain ac rated shunt trips, as noted, are suitable for operation at 55 percent of rated voltage.

Electrical Rating Data①②③

50-60 Hz			Dc		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	8.4	45	12	8.4	35
24		200	24		170
48		830	48		710
60		1280	60		1105
110④	60	100	110	77	110
120④		120	120		130
127④		140	125		140
208④		420	...	..	....
220④		470	...	..	....
240④		550	...	..	....
380	266	95	220	154	41
400		108	250	..	54
415		120	...	..	....
440		136	...	..	....
480	336	40	...	..	....
525		50	...	..	....
550		50	...	..	....
600		70	...	..	....
9	6.3	80	...	..	....

Ordering Information

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. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

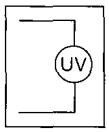
Shunt Trip

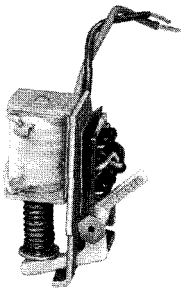
Voltage Rating (Ac Freq = 50/60 Hz)	**Factory Mounted** Connection Type and Location: 18-inch Pigtail Leads, Same Side — CATALOG NUMBERS	**Field Mounted** Field Installation Kits● Pigtail Leads — CATALOG NUMBERS
Left Pole Mounting Ac/Dc Ratings⑥		
24/50-60 Hz	Order by Description	2606D57G08
48/50-60 Hz		2606D57G07
60/50-60 Hz		2606D57G06
120/50-60 Hz⑦		2606D57G05
208/50-60 Hz		2606D57G04
240/50-60 Hz		2606D57G03
480/50-60 Hz		2606D57G02
600/50-60 Hz		2606D57G01
12 dc		2606D57G14
24 dc		2606D57G13
48 dc		2606D57G12
60 dc		2606D57G11
125 dc		2606D57G10
250 dc		2606D57G09
Right Pole Mounting Ac/Dc Ratings		
24/50-60 Hz	Order by Description	2606D57G22
48/50-60 Hz		2606D57G21
60/50-60 Hz		2606D57G20
120/50-60 Hz⑦		2606D57G19
208/50-60 Hz		2606D57G18
240/50-60 Hz		2606D57G17
480/50-60 Hz		2606D57G16
600/50-60 Hz		2606D57G15
12 dc		2606D57G28
24 dc		2606D57G27
48 dc		2606D57G26
60 dc		2606D57G25
125 dc		2606D57G24
250 dc		2606D57G23

① Approximate unlatching time — 6 milliseconds.
② Approximate total circuit breaker contact opening time — 18 milliseconds.
③ Endurance — 5000 electrical operations plus 1000 mechanical operations.
④ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.
⑤ Listed with Underwriters Laboratories, Inc. for field installation under E64983.
⑥ Standard mounting location – leads exit side of breaker.
⑦ Suitable for use with Class 1 ground fault sensing element.

Series C M-Frame Internal Accessories, MD and MDY Only

UNDERVOLTAGE RELEASE MECHANISM





For undervoltage protection. A solenoid device mounts within breaker case. Coil must be energized before closing breaker. Trips breaker when voltage drops below 35 to 70% of coil rating. Picks up and seals in at 85% of coil rating. For line voltages up to 250 volts dc or 600 volts ac. Externally mounted resistors are supplied for certain ratings. Standard leads extend 18 in. outside of breaker. Longer leads may be specified.

NOTE: Undervoltage release mechanism attachments are not designed for, and should not be used as, circuit interlocks. For further information, refer to Cutler-Hammer.

Ordering Information
Select handle reset undervoltage release mechanism style 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. Styles shown are for standard automatic reset undervoltage releases. Performance data is shown on applicable circuit breaker accessory nameplates.

Electrical Rating Data ①

Voltage Rating Hertz	Breaker Type: Coil Amperes	External Series Resistance (Ohms)	Total VA
24 ac	.....	.....	..
48 ac	.....	.....	..
60 ac	.....	.....	..
120 ac	0.023	.....	2.8
208 ac	0.018	.....	3.8
240 ac	0.013	.....	3.2
480 ac	0.013	30,000	6.3
600 ac	0.012	50,000	7.2
12 dc	0.048	.....	0.6
24 dc	0.023	.....	0.6
48 dc	0.012	600	0.6
60 dc	0.013	1,500	0.8
125 dc	0.013	6,500	1.7
250 dc	0.013	16,500	3.3

Undervoltage Release Mechanism

Voltage Rating (Ac Freq = 50/60 Hz)	Factory Mounted: Connection Type and Location: 18-inch Pigtail Leads: Same Side: CATALOG NUMBERS		Field Mounted: Field Installation Kits② Pigtail Leads: CATALOG NUMBERS
Left Pole Mounting Ac Ratings			
48/50-60 Hz			.....
120/50-60 Hz			457D727G05
208/50-60 Hz			457D727G20
240/50-60 Hz			457D727G06
480/50-60 Hz			457D727G07
600/50-60 Hz			457D727G08
Right Pole Mounting③ Ac Ratings			
24/50-60 Hz		All of the undervoltage releases listed on right can be specified for factory mounting at the same price as listed for the kit. These attachments have the leads out the side and are UL listed when factory mounted unless other non-UL listed modifications are used.	.....
48/50-60 Hz			.....
120/50-60 Hz			457D727G01
208/50-60 Hz			457D727G19
240/50-60 Hz			457D727G02
480/50-60 Hz			457D727G03
600/50-60 Hz			457D727G04
Left Pole Mounting Dc Ratings			
12 dc			457D727G14
24 dc			457D727G15
48 dc			457D727G16
60 dc			457D727G22
125 dc			457D727G17
250 dc			457D727G18
Right Pole Mounting③ Dc Ratings			
12 dc			457D727G09
24 dc			457D727G10
48 dc			457D727G11
60 dc			457D727G21
125 dc			457D727G12
250 dc			457D727G13

① Endurance: 5000 electrical operations plus 1000 mechanical operations.
② Listed with Underwriters Laboratories, Inc. for field installation under E64983.
③ Standard mounting location — leads exit side of breaker.

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New Information
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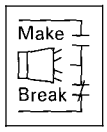
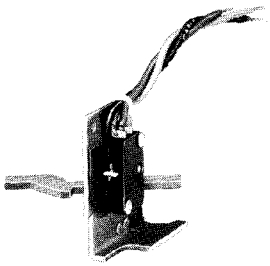
31-500A

Series C® M-Frame Internal Accessories MDS and MDSY Only

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- or 3-pole circuit breakers, the alarm (signal)/lockout switch consists of one make or one break or make/break SPDT (single-pole double-throw) switch. 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.

Electrical Rating Data①②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	Dc	0.5③	
250	Dc	0.25③	

Ordering Information

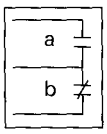
Alarm (Signal)/Lockout Switch

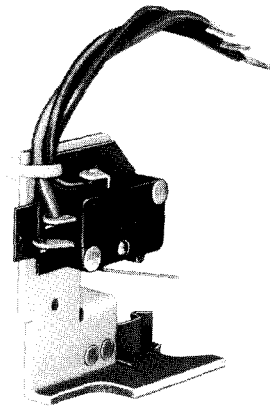
Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	**Factory Mounted** Connection Type and Location	**Field Mounted** Field Installation Kits④
		18-inch Pigtail Leads	Pigtail Leads
		Same Side⑤	
		CATALOG NUMBERS	CATALOG NUMBERS
1M (Make)	Left⑤	Order by Description	Factory Installation Only
1B (Break)	Left⑤		
1M/1B Make/Break	Left⑤		

① Endurance — 5000 electrical operations plus 1000 mechanical operations.
② Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc. for factory installation.
⑤ Standard mounting location — leads exit side of breaker. MDS is left only.

Series C M-Frame Internal Accessories, MDS and MDSY Only

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 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.

Electrical Rating Data①②

Maximum Voltage	Frequency	Maximum Current Amps	Dielectric Withstand Voltage
600 125 250	50/60 Hz Dc Dc	6 0.5③ 0.25③	2500

Ordering Information

Auxiliary Switch

Number of Sets of Contacts (1A and 1B)	Mounting Location (Pole)	**Factory Mounted** Connection Type and Location	**Field Mounted** Field Installation Kits④
		18-inch Pigtail Leads	Pigtail Leads
		Same Side⑤	
		CATALOG NUMBERS	CATALOG NUMBERS
1	Left⑤ Right	Order by Description	1371D72G03
2	Left⑤ Right		1371D72G06
3	Left⑤ Right		1371D72G09

Auxiliary Switch-Alarm (Signal)/Lockout (ASL) Switch Combination
Each catalog number listed in the following table includes one auxiliary switch and one alarm switch.

Number of Sets of Contacts (1A and 1B and 1M and 1B)	Mounting Location (Pole)	**Factory Mounted** Connection Type and Location	**Field Mounted** Field Installation Kits④
		18-inch Pigtail Leads	Pigtail Leads
		Same Side⑤	
		CATALOG NUMBERS	CATALOG NUMBERS
1	Left⑤	Order by Description	Factory Installation Only

① Endurance — 5000 electrical operations plus 1000 mechanical operations.
② Pigtail wire size — No. 18 AWG (0.82 mm²).
③ Non-inductive load.
④ Listed with Underwriters Laboratories, Inc. for field installation under E64983.
⑤ Standard mounting location — leads exit side of breaker.

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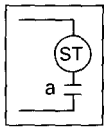
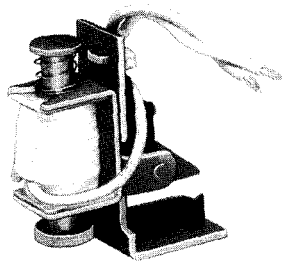
Series C® M-Frame Internal Accessories MDS and MDSY Only

SHUNT TRIP





The shunt trip provides remote controlled tripping of the circuit breaker. MDS shunt trip is provision to trip flux transfer shunt trip from external 32 to 120 volt (DC to 60 Hz) or 240 to 600 volt AC 50/60 Hz source. When required for ground fault protection applications, certain ac rated shunt trips, as noted, are suitable for operation at 55 percent of rated voltage.

Electrical Rating Data①②③

50-60 Hz			Dc		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	8.4	45	12	8.4	35
24		200	24		170
48		830	48		710
60		1280	60		1105
110④	60	100	110	77	110
120④		120	120		130
127④		140	125		140
208④		420	...	..	....
220④		470	...	..	....
240④		550	...	..	....
380	266	95	220	154	41
400		108	250	..	54
415		120	...	..	....
440		136	...	..	....
480	336	40	...	..	....
525		50	...	..	....
550		50	...	..	....
600		70	...	..	....
9	6.3	80	...	..	....

Ordering Information
Select shunt trip catalog number for the voltage within the indicated voltage range. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Shunt Trip

Voltage Rating (Ac Freq = 50/60 Hz)	**Factory Mounted** Connection Type and Location	**Field Mounted** Field Installation Kits⑤
	18-inch Pigtail Leads	Pigtail Leads
	Same Side⑤	
	CATALOG NUMBERS	CATALOG NUMBERS
Left Pole Mounting Ac/Dc Ratings⑥		
32-120 V (Dc to 60 Hz) 240-600 Vac 50/60 Hz	Order by Description	1371D72G22 1371D72G32

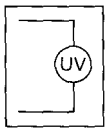
LOW ENERGY SHUNT TRIP

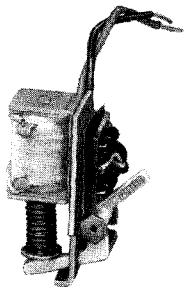
Use standard 32-120 Vdc to 60 Hz shunt trip.

① Approximate unlatching time — 6 milliseconds.
② Approximate total circuit breaker contact opening time — 18 milliseconds.
③ Endurance — 5000 electrical operations plus 1000 mechanical operations.
④ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.
⑤ Listed with Underwriters Laboratories, Inc. for field installation under E64983.
⑥ Standard mounting location – leads exit side of breaker.

Series C M-Frame Internal Accessories, MDS and MDSY Only

UNDERVOLTAGE RELEASE MECHANISM





For undervoltage protection. A PC board and an undervoltage coil mount within breaker case. The coil must be energized before closing breaker. Trips breaker when voltage drops below 35 to 70% of coil rating. Picks up and seals in at 85% of coil rating. For line voltages up to 250 volts Dc or 240 volts Ac. Externally mounted resistors are supplied for certain ratings. Standard leads extend 18 in. outside of breaker. Longer leads may be specified.

NOTE: U.V.R. attachments are not designed for, and should not be used as, circuit interlocks. For further information, refer to Cutler-Hammer.

Electrical Rating Data ①

Voltage Rating Hertz	Breaker Type MDS	
	Coil Amperes	Total VA
24 ac	. .	. .
48 ac	. .	. .
60 ac	. .	. .
120 ac	.05	6
208 ac	. .	. .
240 ac	. .	. .
12 dc	. .	. .
24 dc	. .	. .
48 dc	. .	. .
60 dc	. .	. .
125 dc	. .	. .
250 dc	. .	. .

Undervoltage Release Mechanism

Voltage Rating (Ac Freq = 50/60 Hz)	**Factory Mounted** Connection Type and Location 18-inch Pigtail Leads Same Side② CATALOG NUMBERS
Left Pole Mounting② Ac Ratings	
120 50/60 208 50/60 240 50/60	Factory Mounting Only. Order by Description.
Left Pole Mounting② Dc Ratings	
24 dc 48 dc 60 dc 125 dc 250 dc	Factory Mounting Only. Order by Description.

① Endurance: 5000 electrical operations plus 1000 mechanical operations.
② Standard mounting location — leads exit side of breaker.

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June 1994
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Mailed to: E, D, C/29-100A, 31-400A,
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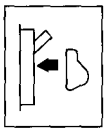
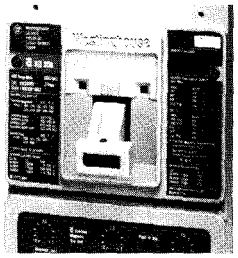
Series C® M-Frame External Accessories

NON-PADLOCKABLE 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.)

Ordering Information
One per circuit breaker.

CATALOG NUMBER
1720101

PADLOCKABLE HANDLE LOCK①

For locking in OFF position only.

STYLE NUMBER
6591C30G02

For locking in OFF or ON position.

STYLE NUMBER
6591C30G05

KEY INTERLOCK KIT (Lock Not Included)

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 deadbolt lock. (Factory installation only.)

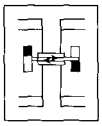
Ordering Information
Select type of lock required and order by description.

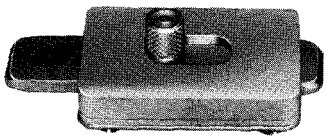
Lock Manufacturer	Lock Type	Bolt Projection in Withdrawn Position
Superior	B4003-1	1 inch
Kirk	F	1 inch
Square D	SF	1 inch
Federal Pioneer	VF	1 inch
Castell	K or QK	1 inch

① Underwriters Laboratories, Inc. listing pending under UL File E7819.

Series C M-Frame External Accessories

SLIDING BAR INTERLOCK



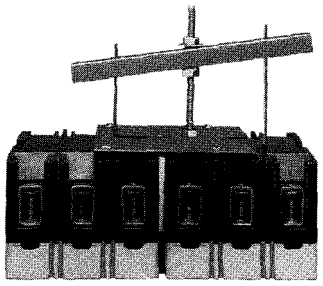


The sliding bar interlock provides mechanical interlocking between two adjacent 2- or 3-pole circuit breakers. It is installed on the enclosure cover between the circuit breakers. When the sliding bar interlock handle is moved from one side to the other, a bar extends to alternately block movement of 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.)

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

STYLE NUMBER
46A8396G14

WALKING BEAM INTERLOCK

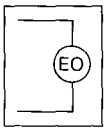


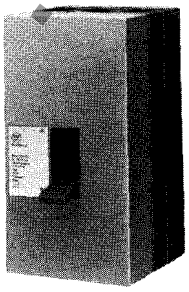
The walking beam interlock provides mechanical interlocking between two adjacent circuit breakers of the same pole configuration. The walking beam interlock mounts on a bracket behind and between the circuit breakers. A plunger on each end of the beam is inserted through an access hole in the backplate and base of each circuit breaker. The walking beam interlock prevents both circuit breakers from being switched to ON at the same time. Factory-modified circuit breakers are required for this application.

Ordering Information
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.

CATALOG NUMBER
Order by Description

ELECTRICAL (MOTOR) OPERATOR





The electrical (motor) operator enables local and remote circuit breaker ON, OFF, and reset switching. The electrical operator is mounted on the circuit breaker cover.

Means are provided for remote electrical operation and for local manual operation. The table above provides electrical rating data for the electrical (solenoid) operator.

Electrical Rating Data ①●③④

Voltage④ (V)	Inrush Current (A)
120	8
208	5
240	4
480	—

Ordering Information

Operating Voltage	Frequency	Terminal Block STYLE NUMBERS
120	50/60 Hz	5664D54G75
208		5664D54G78
240		5664D54G76
480		5664D54G77
24	Dc	5664D54G81
125		5664D54G96

① Underwriters Laboratories listed under UL File E64983.
② The electrical operator design has been endurance tested for 6,000 electrical operations.
③ Frequency: 50/60 Hz.
④ Tolerance: +10%, −15% of nominal voltage.

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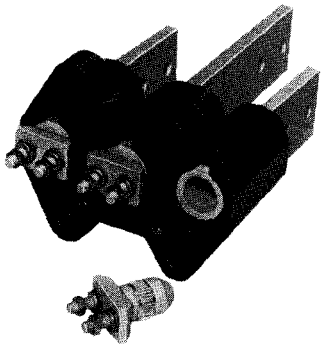
Series C® M-Frame External Accessories

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- and 3-pole circuit breakers. Common mounting plates for line and load end adapters are available. The plug-in adapters are rated 800A. (Field installation only.)

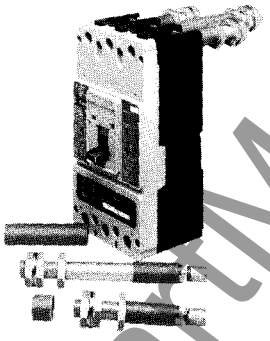
Ordering Information
Plug-in adapters are available for 2- and 3-pole circuit breaker configurations. One plug-in adapter is used for each terminal end (line or load); specify quantity when ordering. A one-piece steel mounting plate is available at no charge when ordered with line and load plug-in adapters.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

Continuous Current Rating (Amperes)	CATALOG NUMBERS	
	2-Pole	3-Pole
800	2614D53G05	2614D53G06

Mounting Plate

STYLE NUMBER
1290C73H01

REAR CONNECTING STUDS①



Rear connecting studs are available in several sizes to accommodate specific fixed-mounted circuit breaker applications. The rear connecting studs are rated 225 to 800 amperes.

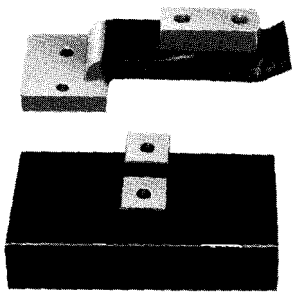
Ordering Information
Each rear connecting stud assembly consists of one stud and one tube. To maintain proper clearances between poles, select alternate long and short stud assemblies for circuit breakers with more than one pole. One assembly is required for line-end and one for load-end of each pole.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

Stud Ampere Rating	Diameter, Inches and Thread	Extension Back of Breaker, Inches	STUD STYLE NUMBERS
225	½-13	3 21/32	314C960G01
400	¾-16	5 29/32	314C960G04
400	¾-16	8 13/32	314C960G05
400	¾-16	10 29/32	314C960G06
600	1 -12	5 29/32	314C960G07
600	1 -12	8 13/32	314C960G08
600	1 -12	10 29/32	314C960G09
800	1⅛-12	5 29/32	314C960G10
800	1⅛-12	8 13/32	314C960G11
800	1⅛-12	10 29/32	314C960G12

① Not UL listed.

Series C M-Frame External Accessories

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 800A rating for outside and center poles. (Field installation only.)

Ordering Information
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.

Refer to panelboard manufacturer for compatibility.

Panelboard Connecting Straps

Bus Spacing (Inches)	Continuous Current Rating (Amperes)	Pole Connector Type		
		Short	Medium	Long
		STYLE NUMBERS		
3½	800	314C996G01	314C996G02	314C996G03

Mounting Bracket

STYLE NUMBER
315C270H01

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Printed in U.S.A.
June 1994

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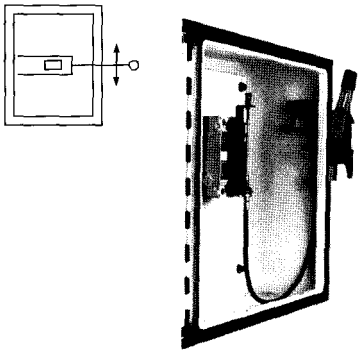
January 1995
Supersedes Selection Data 29-120M,
pages 23-24, dated June 1994
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Westinghouse Series C® M-Frame External Accessories

FLEX SHAFT™ HANDLE MECHANISM



The Flex Shaft type handle mechanism is an extra heavy-duty handle mechanism designed for mounting in flange-type enclosures. An operating handle, flexible shaft, and mechanism are required for standard application.

The handle can be locked in the RESET position with up to three padlocks. The handle is suitable for NEMA 1, 3R, 4, 4X, and 12 fabricated enclosures. It is supplied for mounting in right-hand flange enclosures. The handle fits the industry standard cutout.

Three lengths of shafts are available for use with the wide range of depths of various enclosures (4 ft. through 6 ft.). These choices enable this mechanism to be mounted in various depth, width, and height enclosures. Note: when selecting the length of shaft, ensure minimum bending radius of 5 inches is maintained to operate properly.

The standard method of shipment includes the mechanism preset at the factory; however, minor field adjustments may be required.

Ordering Information
Catalog Number includes complete assembly consisting of handle, flexible shaft, operating mechanism, and hardware kit to fit industry standard flange cutout.

Circuit Breaker	Length of Flex Shaft (in feet)	CATALOG NUMBERS
M-Frame	4	F7S04
	5	F7S05
	6	F7S06

Note: NEMA 4/4X handle mechanisms are available. Add suffix X to complete catalog number.

Accessories

Standard Door Hardware
(Required Adapter Kit Below)

CATALOG NUMBERS	Latch	Panel Height
DH1R	2 point	Up to 30 in.
DH2R	2 point	Up to 40 in.
DH3R	3 point	Over 40 in.

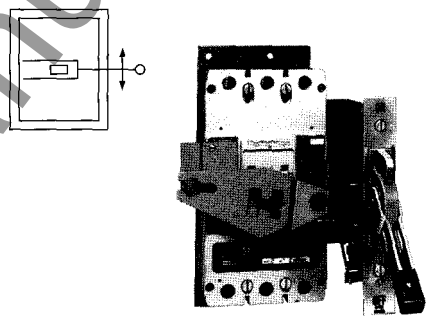
Door Hardware Adapter Kit
(Required on Standard Door Hardware)

CATALOG NUMBERS
AMTDHA

Door Hardware for Hoffman A – 25 Enclosure
Kit consists of special door hardware and door interlock pin. Available for right-hand flange mounting only.

CATALOG NUMBERS	Latch	Panel Height
HDH-2R	2 point	Up to 40 in.
HDH-3R	3 point	Over 40 in.

TYPE SM SAFETY HANDLE MECHANISM ①



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 application is also available. The handle mechanism will accept up to three padlock shackles, each with a maximum diameter of 3/8 inch (9.52mm).

Ordering Information
Right-Hand Mounting Enclosure Cover

CATALOG NUMBER	
Hinged on Left	SM800R

Left-Hand Mounting Enclosure Cover

CATALOG NUMBER	
Hinged on Right	SM800L

① Must be ordered with door hardware. If door hardware is not used door operated interlock defeater kit is required.

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Printed in U.S.A.
January 1995

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June 1994
New Information
Mailed to: E, D, C/29-100A, 31-400A,
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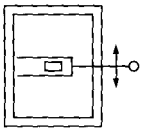
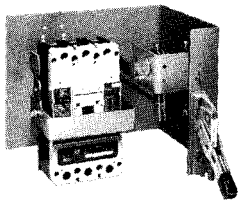
Series C® M-Frame External Accessories

TYPE AMT VARI-DEPTH/VARI-WIDTH FLANGE MOUNTED HANDLE MECHANISM①





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 3/8 inch (7.92mm).

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.

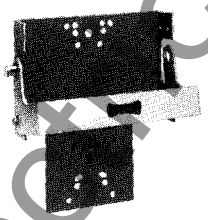
Accessories for Type AMT Mechanisms

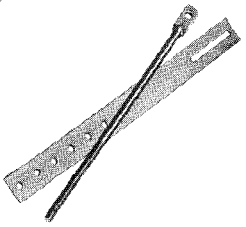
Spacer Kit to Vary Width●

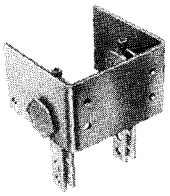
This spacer kit is for up to 1-inch variation and consists of multiples of thin spacers to be used as required. A maximum of two kits per installation may be used. Hardware is not supplied because of dimensional variations. Use standard 1/4-inch x 20 bolts.

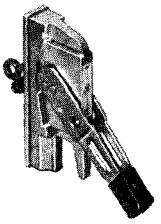
CATALOG NUMBER
AMTSK1

Type AMT Component Parts
Backplate and Yoke Assembly









Complete Assembly	Consists of and Shipped as Component Parts Listed Below			
	Backplate and Yoke Assembly	Operating Rod and Brace Assembly②	Flange Mounted Pivot Mechanism Assembly②	External Operating Handle③
CATALOG NUMBERS				
Above Handle Mounting with Short Rod Brace				
AMTMAASV	AMTMA	AMTRB1④	AMTPM	AMTOP
Above the Handle Mounting with Long Rod and Brace				
AMTMAALV	AMTMA	AMTRB2⑤	AMTPM	AMTOP
Below the Handle Mounting with Short Rod and Brace				
—	AMTMA	AMTRB1④	AMTPM-B	AMTOP
Below the Handle Mounting with Long Rod and Brace				
—	AMTMA	AMTRB2⑤	AMTPM-B	AMTOP

① Underwriters Laboratories listed under UL File E64983.
② Width spacer kit not included.
③ NEMA 4/4X handle available. Refer to Cutler-Hammer.
④ Minimum enclosure depth 6 1/2 in.; maximum enclosure depth 14 in.
⑤ Minimum enclosure depth 12 1/2 in.; maximum enclosure depth 18 in.

Series C M-Frame External Accessories

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

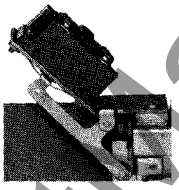
Note:
Right hand enclosure cover hinged on left, Left hand enclosure cover hinge on right.

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
373D260G05

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

STYLE NUMBER	
Right- or Left-Hand Meeting	656D669G01

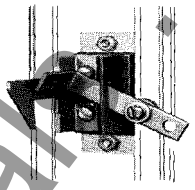
For Door Hardware Using Roller Latches

STYLE NUMBERS	
Right-Hand Meeting	370D801G04
Left-Hand Meeting	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

Door Hardware Kit



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).

CATALOG NUMBER
AMTDHA

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June 1994
New Information
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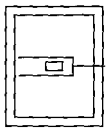
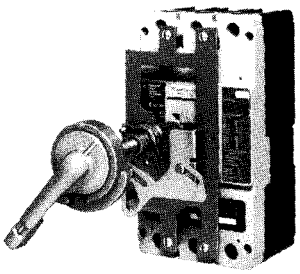
Series C® M-Frame External Accessories

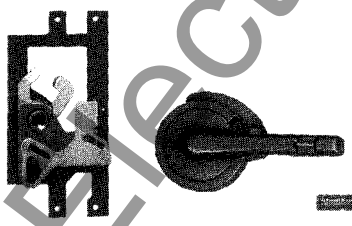
VARI-DEPTH HANDLE MECHANISM●





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 $^{5}/_{16}$ inch (7.94mm).

Ordering Information②



Mechanisms③④		Handle	Shaft			
Standard – (No Internal Lockoff)	Special – (With Internal Lockoff)	NEMA 1, 3R, 12 (With Hardware)	Standard		Long	
STYLE NUMBERS			STYLE NUMBER	Panel Depth	STYLE NUMBER	Panel Depth
458D493G05	458D493G13	504C323G03	47A4446G36	$5^{7}/_{8}$–$11^{1}/_{8}$	47A4446G37	$11^{13}/_{16}$–$15^{9}/_{16}$

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.

STYLE NUMBER	
Standard Finish	504C323G01

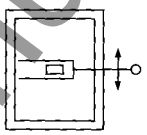
Handle Kits: These kits are for use with NEMA 4, 7, and 9 cast enclosures. The kits include a special operating handle, mounting bolts, and an adapter bushing. (The bushing may be purchased separately.) Kits may be used with standard mechanisms and shafts as required.

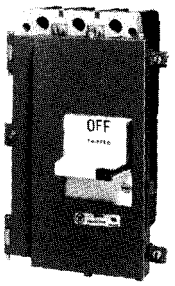
STYLE NUMBER	
NEMA 4 and 9 Kit	314C794G10

STYLE NUMBER	
NEMA 7 Kit	314C794G09

STYLE NUMBER	
Adapter Bushing Only	314C794G04

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 $^{3}/_{8}$ inch (7.92mm). UL File E56845.

Ordering Information

For use with NEMA 1 Enclosure Catalog.

CATALOG NUMBER
SMCU800MA

For use with NEMA 12 Enclosure Catalog.

CATALOG NUMBER
CMCU800MA

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 connect studs are used, refer to Cutler-Hammer.
③ Includes hardware.
④ Outline and drilling plan reference: Drawing 653D270.

Series C M-Frame External Accessories

Cutler-Hammer
Westinghouse &
Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.

June 1994

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Westinghouse &
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Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

June 1994
New Information
Mailed to: E, D, C/29-100A, 31-400A,
31-500A

Series C® M-Frame Modifications

SPECIAL CALIBRATION①

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 400A at 400 Hz on MD breaker. Maximum continuous amperes on MDS Breaker is 600A.

See Application Data 29-160 for information regarding special conditions.

50°C Calibration①
Add suffix "V" to catalog number for complete breaker, listed above, when ordering listed ampere ratings for breakers to be used in 50°C ambients. (MD and MDY only.)

Types MDS and MDSY are insensitive to changes in ambient temperature, however, they include circuitry to protect breaker components from abnormally high ambient temperatures.

Order by description.
Refer to price list.

MOISTURE-FUNGUS TREATMENT

All Series C circuit breaker cases are molded from glass-polyester which does not support the growth of fungus. Any parts which are susceptible to the growth of fungus will require special treatment.

Order by description.
Refer to price list.

FREEZE-TESTED CIRCUIT BREAKERS

The circuit breakers may be ordered with freeze testing. This option uses special lubrication and mechanical operation is verified at –40 degrees C.

Order by description.
Refer to price list.

MARINE APPLICATION

Refer to Cutler-Hammer for specific marine applications.

① Not listed with Underwriters Laboratories, Inc.

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