Typical Series C F-Frame Breaker

- All Series C F-frame circuit breakers are HACR rated.
- All circuit breakers 10 through 50 amperes are suitable for HID (high intensity discharge) use.
- All F-frame circuit breakers are suitable for reverse feed use.

Interrupting Capacity Ratings

UL489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA)						Page Number
		Volts Ac (50/60 Hz)				Volts Dc①		
		240	277	480	600	125	250②③	
ED	2, 3	65	–	–	–	10	–	32
EDH	2, 3	100	–	–	–	10	–	32
EDC	2, 3	200	–	–	–	10	–	32
EHD	1	–	14	–	–	10	–	32
	2, 3	18	–	14	–	–	10	32
FDB	2, 3, 4	18	–	14	14	–	10	32
FD	1	–	25	–	–	10	–	32
	2, 3, 4	65	–	25	18	–	10	32
HFD	1	–	65	–	–	10	–	33
	2, 3, 4	100	–	65	25	–	22	33
FDC	2, 3, 4	200	–	100	35	–	22	33

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

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA)						Page Number
		Volts Ac (50/60 Hz)				Volts Dc①		
		220, 240	380, 415	440	500	125	250②③	
ED	2, 3	65	–	–	–	10	–	32
EDH	2, 3	100	–	–	–	10	–	32
EDC	2, 3	200	–	–	–	10	–	32
FDB	2, 3, 4	18	14	14	14	–	10	32
FD	1	25	–	–	–	10	–	32
	2, 3, 4	65	35	35	18	–	10	32
HFD	1	65	–	–	–	10	–	33
	2, 3, 4	100	65	65	25	–	22	33
FDC	2, 3, 4	200	100	100	35	–	22	33

① Dc ratings apply to substantially non-inductive circuits.
② 2-pole circuit breaker, or two poles of 3-pole circuit breaker.
③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.

Types HFD and FDC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Maximum Continuous Ampere Rating @ 40°C	600 Vac Maximum, 250 Vdc	277 Vac Maximum, 125 Vdc			600 Vac Maximum, 250 Vdc		
	65 kAIC @ 277 Vac	65 kAIC @ 480 Vac			100 kAIC @ 480 Vac		
	Type HFD				Type FDC Current Limiting		
	1-Pole	2-Pole	3-Pole	4-Pole	2-Pole	3-Pole	4-Pole
	Catalog Number (Includes Terminals on Load End Only)						
15	HFD1015	HFD2015	HFD3015	HFD4015	FDC2015	FDC3015	FDC4015
20	HFD1020	HFD2020	HFD3020	HFD4020	FDC2020	FDC3020	FDC4020
25	HFD1025	HFD2025	HFD3025	HFD4025	FDC2025	FDC3025	FDC4025
30	HFD1030	HFD2030	HFD3030	HFD4030	FDC2030	FDC3030	FDC4030
35	HFD1035	HFD2035	HFD3035	HFD4035	FDC2035	FDC3035	FDC4035
40	HFD1040	HFD2040	HFD3040	HFD4040	FDC2040	FDC3040	FDC4040
45	HFD1045	HFD2045	HFD3045	HFD4045	FDC2045	FDC3045	FDC4045
50	HFD1050	HFD2050	HFD3050	HFD4050	FDC2050	FDC3050	FDC4050
60	HFD1060	HFD2060	HFD3060	HFD4060	FDC2060	FDC3060	FDC4060
70	HFD1070	HFD2070	HFD3070	HFD4070	FDC2070	FDC3070	FDC4070
80	HFD1080	HFD2080	HFD3080	HFD4080	FDC2080	FDC3080	FDC4080
90	HFD1090	HFD2090	HFD3090	HFD4090	FDC2090	FDC3090	FDC4090
100	HFD1100	HFD2100	HFD3100	HFD4100	FDC2100	FDC3100	FDC4100
110	HFD1110	HFD2110	HFD3110	HFD4110	FDC2110	FDC3110	FDC4110
125	HFD1125	HFD2125	HFD3125	HFD4125	FDC2125	FDC3125	FDC4125
150	HFD1150	HFD2150	HFD3150	HFD4150	FDC2150	FDC3150	FDC4150
175	–	HFD2175	HFD3175	HFD4175	FDC2175	FDC3175	FDC4175
200	–	HFD2200	HFD3200	HFD4200	FDC2200	FDC3200	FDC4200
225	–	HFD2225	HFD3225	HFD4225	FDC2225	FDC3225	FDC4225

Instruction Leaflet/FRED Number 29C101

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	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 Number	
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

Note: Molded Case Switches may open above 1800 amperes.

Instruction Leaflet/FRED Number 29C101

Line and Load Terminals

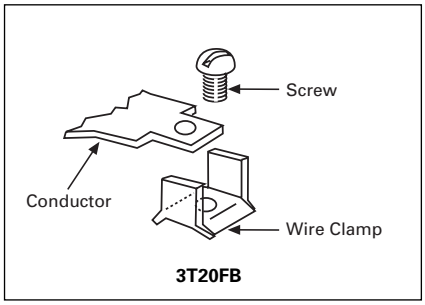
Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. Except as noted, terminals comply with Underwriters Laboratories, Inc., Standards UL486A and UL486B. Unless otherwise specified, F-frame circuit breakers are factory equipped 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. Specify if factory installation is required.

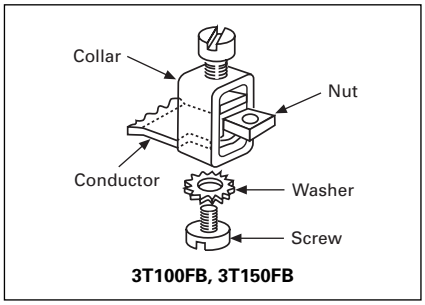
Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range	Metric Wire Range mm^2	Package of 3 Terminals Catalog Number
Standard Pressure Type Terminals					
20 (EHD)	Steel	Cu/Al	#14-#10	2.5-4	**3T20FB**①
100	Steel	Cu/Al	#14-1/0	2.5-50	**3T100FB**
225	Aluminum	Cu/Al	#14-4/0	25-95	**3TA225FD**
Optional Pressure Terminals					
50	Aluminum	Cu/Al	#14-#4	2.5-16	**3TA50FB**①
100	Aluminum	Cu/Al	#14-1/0	2.5-50	**3TA100FD**
200	Stainless Steel	Cu	#4-4/0	25-95	**3T150FB**
225	Aluminum	Cu/Al	#6-300 kcmil	16-150	**3TA225FDK**②



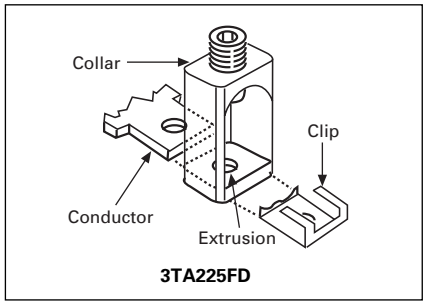
3T20FB

Assemble wire clamp to bottom of conductor as shown.



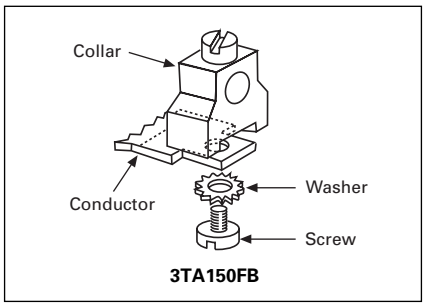
3T100FB, 3T150FB

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



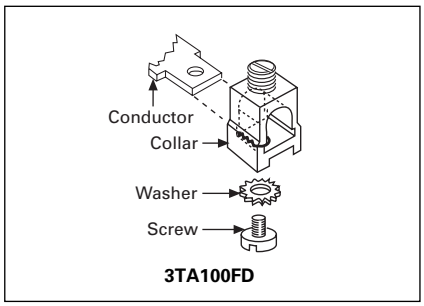
3TA225FD

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.



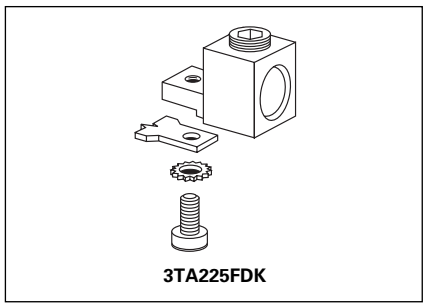
3TA150FB

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.



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.

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 or trip units.

Circuit Breaker Catalog Number

FDC 3 100 L

Circuit Breaker Type	Number of Poles	Trip Amperes	Suffix
EHD	1: 1 Pole	10	E: 100% Protected (4-Pole only) Neutral Pole
FDB	2: 2 Poles	15	EH: 50% Protected (4-Pole only)
FD	3: 3 Poles	20	K: High Magnetic Molded Case Switch
HFD	4: 4 Poles	25	L: Line and Load Terminals
FDC		30	S: Stainless Steel Terminals
		35	V: 50˚C Calibration
		40	W: Without Terminals
		45	Y: Line Terminals Only
		50	Z: Aluminum Terminals (≤ 100 Amperes)
		60	
		70	
		80	
		90	
		100	
		110	
		125	
		150	
		175 (FD, HFD, FDC, 2-, 3-, 4-Pole Only)	
		200 (FD, HFD, FDC, 2-, 3-, 4-Pole Only)	
		225 (FD, HFD, FDC, 2-, 3-, 4-Pole Only)	

EDC 3 200 L

Circuit Breaker Type	Number of Poles	Trip Amperes	Suffix
ED	2: 2 Poles	100	L: Line and Load Terminals
EDH	3: 3 Poles	125	W: Without Terminals
EDC		150	Y: Line Terminals Only
		175	Z: Aluminum Terminals (100 Amperes)
		200	
		225	

Dimensions/Weights

Dimensions, Inches (mm)

Number of Poles	Width	Height	Depth
1	1.375 (35)	6 (152)	3.375 (86)
2	2.75 (70)	6 (152)	3.375 (86)
3	4.125 (105)	6 (152)	3.375 (86)
4	5.5 (140)	6 (152)	3.375 (86)

Approximate Shipping Weight, Lbs. (kg)

Breaker Type	Number of Poles			
	1	2	3	4
ED, EDH, EDC	–	3 (1.361)	4.5 (2.041)	–
EHD, FDB, FD, HFD, FDC	2 (.907)	3 (1.361)	4.5 (2.041)	6 (2.721)

Allowable 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	1-Pole		2-Pole			3-Pole				4-Pole			
		Center		Left	Right		Left	Center	Right		Left	Center	Right	Neu.
Internal Accessories														
Alarm Lockout Switch (Make Only)	139	■												
Alarm Lockout (Make/Break)	139				■		❑		❑		■			
Alarm Lockout (2Make/2Break)	139				■		❑		❑		■			
Auxiliary Switch (1A, 1B)	142				■		■		■		■			■
Auxiliary Switch (2A, 2B)	142				■		■		■		■			■
Auxiliary Switch and Alarm Switch Combination	145				■		❑		❑		■			
Shunt Trip – Standard	148				■		■		■		■			■
Shunt Trip – Low Energy	152				■		■		■		■			
Undervoltage Release Mechanism	154				■		■		■		■			
External Accessories														
End Cap Kit	161			●			●				●			
Keeper Nut	161	●		●			●				●			
Control Wire Terminal Kit	162	●		●			●				●			
Multiwire Connectors	162	●		●			●				●			
Base Mounting Hardware	163	●		●			●				●			
Terminal Shields	165	●		●			●				●			
Terminal End Covers	166						●							
Interphase Barriers	166			●			●				●			
Non-Padlockable Handle Block	168	■		■				■				■		
Snap-on Padlockable Handle Lock Hasp	168	■		■				■				■		
Padlockable Handle Lock Hasp	169				■		❑		❑		❑		❑	
Cylinder Lock	169						■							
Key Interlock Kit	170				■		❑		❑		❑		❑	
Sliding Bar Interlock – Requires Two Breakers	171						●							
Walking Beam Interlock – Requires Two Breakers	171						●				●			
Electrical (Solenoid) Operator	172						●				●			
Plug-in Adapters	174			●			●				●			
Rear Connecting Studs	175	●		●			●				●			
Panelboard Connecting Straps	177	●		●			●				●			
Handle Mechanisms	178						●							
Door Hardware/Accessories	182						●				●			
LFD Current Limiter	183						●							
IQ Energy Sentinel	184			●			●							
Modifications (Refer to Cutler-Hammer)														
Special Calibration	186	●		●			●				●			
Moisture Fungus Treatment	186	●		●			●				●			
Freeze-Tested Circuit Breakers	186	●		●			●				●			
Marine Application	186	●		●			●				●			

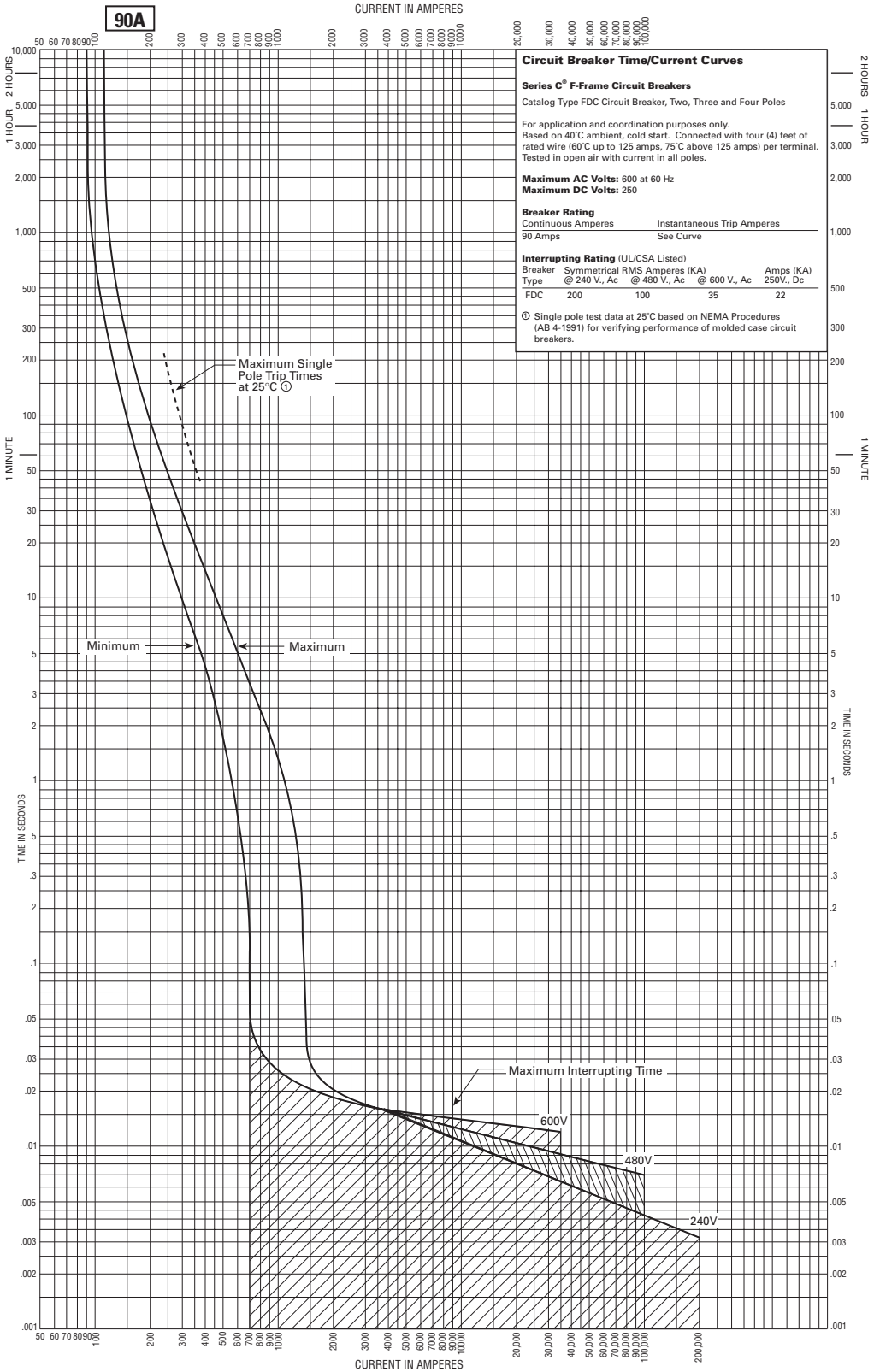
■ Applicable in indicated pole position

❑ May be mounted on left or right pole – not both

● Accessory available/Modification available

AB DE-ION Circuit Breakers

Type FDC 90 Amperes



Circuit Breaker Time/Current Curves

Series C® F-Frame Circuit Breakers

Catalog Type FDC Circuit Breaker, Two, Three and Four Poles

For application and coordination purposes only.
Based on 40˚C ambient, cold start. Connected with four (4) feet of rated wire (60˚C up to 125 amps, 75˚C above 125 amps) per terminal. Tested in open air with current in all poles.

Maximum AC Volts: 600 at 60 Hz
Maximum DC Volts: 250

Breaker Rating

Continuous Amperes	Instantaneous Trip Amperes
90 Amps	See Curve

Interrupting Rating (UL/CSA Listed)

Breaker Type	Symmetrical RMS Amperes (KA) @ 240 V., Ac	@ 480 V., Ac	@ 600 V., Ac	Amps (KA) 250V., Dc
FDC	200	100	35	22

① Single pole test data at 25˚C based on NEMA Procedures (AB 4-1991) for verifying performance of molded case circuit breakers.