

UL489 or UL1077?

What are your Circuit Protection Requirements?

An understanding of circuit types and circuit protection products is critical to ensure their proper application.
See NEC Sections 100, 430 and 409 for definitions.

The proper sizing of an overcurrent protection device is the responsibility of the customer and should be determined using the application standards of the NEC (National Electric Code), CEC (Canadian Electrical Code) or other applicable standards. Per fine print note of 2008 NEC Section 100 "A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Therefore, the rules for overcurrent protection are specific for particular situations."

UL489 Branch Protection



UL1077 Supplementary Protection



What You Need to Know and Look For In Specifications

Certifications – Standards – Acceptance

UL489 Branch Protection

- UL489 Listed or Recognized
- CSA C22.2 No. 5
- International ratings available depending on breaker type

UL1077 Supplementary Protection

- UL Recognized under UL1077
- CSA 22.2 No. 285
- IEC 60947-2 or IEC 898

Function

- Opens automatically on Overload and Short Circuit when properly applied within its ratings
- Protects wire and cable against Overload and Short Circuit
- Opens automatically on Overload and Short Circuit
- Provides additional equipment protection where branch circuit protection is already provided or not required
- Not suitable for the protection of branch circuit conductors

Applications

- Branch circuit protection in control panels, panelboards, switchboards and motor control centers
- Motor overload and motor short circuit protection (UL489 Recognized motor circuit protectors) for control panels and motor control centers
- Used within appliances or other electrical equipment such as control circuits, control power transformers, relays, PLC I/O points and lighting circuits
- Ideal replacement for fuses that are applied as supplementary protection

Features

- Bolted down or DIN-rail mounted
- External handle mechanisms available
- Field mounted accessories
- Stand alone branch circuit protection
- Various levels of protection (curve type)
- High voltage and interruption levels (up to 100 kAIC @ 480V)
- DIN-Rail mounted
- Field mounted accessories
- Current limiting
- Various levels of protection (curve type)
- 10 kAIC @ 240 VAC
- 6 kAIC @ 277 VAC and 5 kAIC @ 480 VAC
- 10 kAIC @ 65 VDC

kAIC = thousands of Amps interrupt capacity

Summary

A Supplementary Protector can't Be used for Branch Circuit Protection.
Understanding the difference between Branch Circuit Protection and Supplementary Protection helps to ensure their proper use.

Mersen Fusible Disconnects FB Series



Overview

Mersen FB Series fusible disconnect switches employ double break contacts per pole to isolate the fuse when the switch is in the OFF position. They are durable, manually operated, and supplied with fuse covers and line side shrouding as a standard safety feature. When used with AutomationDirect's Class CC or J fuses, these switches are tops in short circuit protection. Designed using the latest technology, they comply with UL 98 requirements. FB Series switches are tested and

approved for heavy duty applications, such as "service entrance" or main panel disconnects. Choose from a wide selection of handles meeting OSHA padlocking requirements, NEMA configurations, defater options and NFPA 79 requirements.

Features

- Double break contacts per pole up to 200 A
- Touch-safe fuse covers and line shrouding standard
- Service entrance rated
- Compact footprints
- Front operated switches
- Defeatable pistol handles automatically re-latch when panel door is closed - no tool necessary to reset latch
- External or direct operation handles.

Applications

- Service entrance or main panel disconnects
- "Make and Break" power circuit applications on load
- Fusible isolation switches
- NFPA 79 Solutions

Ratings

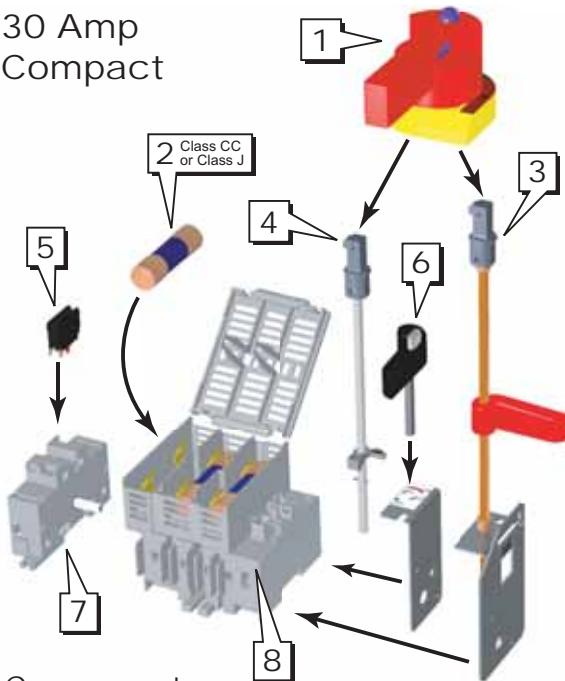
- 600 VAC, 250 VDC
- 30, 60, 100 and 200 Amperes
- Up to 200 kA short circuit rating with Class CC or J fuses

Approvals

- All FB Series switches are UL 98 rated
- UL Listed Guide WHTY, File E191605
- CSA C22.2 # 4 Class 4652 04, File 703166
- IEC 947-3 CE mark

Components

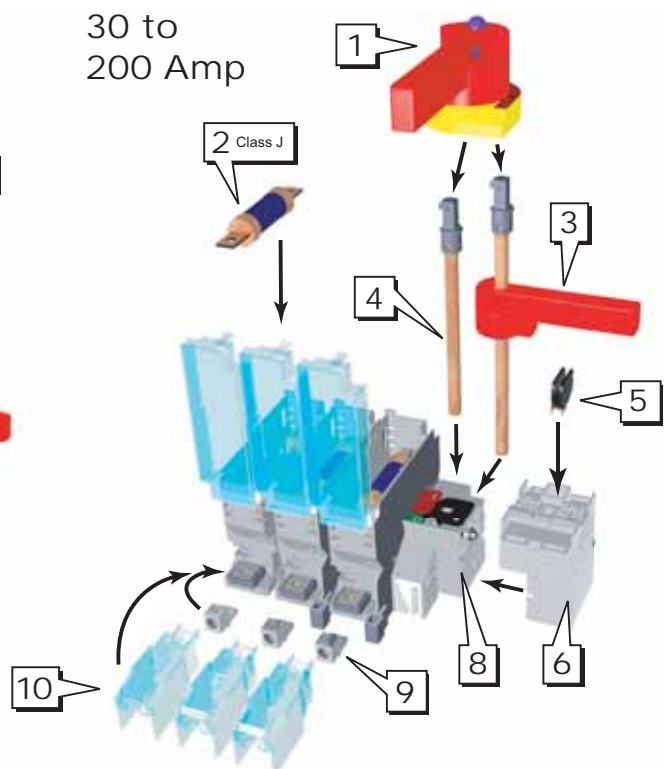
30 Amp Compact



Components

- 1 – External Door Handle
- 2 – Fuse
- 3 – NFPA 79 Compliant Handle Option
- 4 – Standard Shaft

30 to 200 Amp



- 5 – Auxiliary Contact Block
- 6 – Direct Mount Handle Option
- 7 – Auxiliary Contact Holder

- 8 – Disconnect Switch Body
- 9 – Terminal Lugs
- 10 – Terminal Shroud

Mersen Fusible Disconnects

FB Series Selection Guides



Company Information

Systems Overview

Programmable Controllers

Field I/O

Software

C-more & other HMI

Drives

Soft Starters

Motors & Gearbox

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temperature Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

Terminal Blocks & Wiring

Power

Circuit Protection

Enclosures

Tools

Pneumatics

Safety

Appendix

Product Index

Part # Index

FB Series Front-operated Fusible Disconnects						
Style	Part Number	Price	Weight lb(kg)	Ampere Rating	Hp @ Voltage	Interrupt Capacity (kA)
Compact	FBCC30CDT	<--->	1.3(0.60)	30	15 Hp @ 480V	50
	FBJ30CDT	<--->	1.3(0.60)	30	15 Hp @ 480V	50
Standard	FBJ30	<--->	4.9(2.20)	30	15 Hp @ 480V	200
	FBJ60	<--->	4.9(2.20)	60	30 Hp @ 480V	200
	FBJ100	<--->	6.2(2.80)	100	60 Hp @ 480V	200
	FBJ200	<--->	6.6(2.99)	200	125 Hp @ 480V	200

Mersen Fusible Disconnects Component Selection Guide				
Part Number	Price	Weight lb(kg)	Description	Use With
SD200-5	<--->	0.2(0.09)	Operator shaft, type D, 7.9" (200 mm) length, 5x5 mm thick (purchase handle separately)	FBCC30CDT, FBJ30CDT
SD320-5	<--->	0.3(0.14)	Operator shaft, type D, 12.6" (320 mm) length, 5x5 mm thick (purchase handle separately)	FBCC30CDT, FBJ30CDT
SG120-5	<--->	0.15(0.07)	Operator shaft, type G, 4.7" (120 mm) length, 5x5 mm thick (purchase handle separately)	FBCC30CDT, FBJ30CDT
SG200-10	<--->	0.3(0.14)	Operator shaft, type G, 7.9" (200 mm) length, 10x10 mm thick (purchase handle separately)	FBJ30 thru FBJ200
SG200-5	<--->	0.2(0.09)	Operator shaft, type G, 7.9" (200 mm) length, 5x5 mm thick (purchase handle separately)	FBCC30CDT, FBJ30CDT
SG320-10	<--->	0.5(0.23)	Operator shaft, type G, 12.6" (320 mm) length, 10x10 mm thick (purchase handle separately)	FBJ30 thru FBJ200
SG320-5	<--->	0.2(0.09)	Operator shaft, type G, 12.6" (320 mm) length, 5x5 mm thick (purchase handle separately)	FBCC30CDT, FBJ30CDT
SG400-10	<--->	0.7(0.32)	Operator shaft, type G, 15.7" (400 mm) length, 10x10 mm thick (purchase handle separately)	FBJ30 thru FBJ200
HADB1	<--->	0.1(0.05)	Direct mount handle	FBCC30CDT
HADB2	<--->	0.2(0.09)	Direct mount handle	FBJ30CDT
HADB6	<--->	0.4(0.18)	Direct operation, optional handle, 12.415" (315.314 mm) long padlocking on the switch, NFPA 79 compliant	FBCC30CDT, FBJ30CDT
HADB8	<--->	0.4(0.18)	Direct operation, optional handle, 12.415" (315.314 mm) long padlocking on the switch, NFPA 79 compliant	FBJ30 thru FBJ200
HGPB	<--->	0.5(0.23)	Black Pistol handle, NEMA 12, 2.78" long, Type G, defeatable and lockable	FBCC30CDT, FBJ30CDT
HGPB4	<--->	0.6(0.27)	Black Pistol handle, NEMA 4X, 2.78" long, Type G, defeatable and lockable	FBCC30CDT, FBJ30CDT
HGPB4L	<--->	0.7(0.32)	Black long Pistol handle, NEMA 4X, 4.98" long, Type G long, defeatable and lockable	FBJ30 thru FBJ200
HGPBL	<--->	0.6(0.27)	Black long Pistol handle, NEMA 12, 4.98" long, Type G long, defeatable and lockable	FBJ30 thru FBJ200
HGPR	<--->	0.6(0.27)	Red and yellow Pistol handle, NEMA 12, 2.78" long, Type G, defeatable and lockable	FBCC30CDT, FBJ30CDT
HGPR4	<--->	0.6(0.27)	Red and yellow Pistol handle, NEMA 4X, 2.78" long, Type G, defeatable and lockable	FBCC30CDT, FBJ30CDT
HGPR4L	<--->	0.6(0.27)	Red and yellow long Pistol handle, NEMA 4X, 4.98" long, Type G long, defeatable/lockable	FBJ30 thru FBJ200
HGPR4L	<--->	0.6(0.27)	Red and yellow long Pistol handle, NEMA 12, 4.98" long, Type G long, defeatable/lockable	FBJ30 thru FBJ200

Mersen Fusible Disconnects Accessories Selection Guide				
Part Number	Price	Weight lb(kg)	Description	Use With
ACHCD	<--->	0.2(0.09)	Auxiliary contact holder	FBCC30CDT, FBJ30CDT
ACH	<--->	0.1(0.05)	Auxiliary contact holder	FBJ30 thru FBJ200
AC3	<--->	0.1(0.05)	Auxiliary contact for FB Series non-fused disconnect switches. One N.O. contact.10 A. 600 VAC	All FB Series switches
AC4	<--->	0.1(0.05)	Auxiliary contact for FB Series non-fused disconnect switches. One N.C. contact.10 A. 600 VAC	All FB Series switches
TL100	<--->	0.2(0.09)	Terminal lug kit, Aluminum, tin-plated, 2/0 to #14, 6 lugs per kit	FBJ100
TL200	<--->	0.4(0.18)	Terminal lug kit, Aluminum, tin-plated, 3/0 to #6, 6 lugs per kit	FBJ200
TS100FB*	<--->	0.15(0.07)	Terminal shroud kit, Use with 100 amp fusible switch, 3 per kit	FBJ100
TS200FB*	<--->	0.5(0.23)	Terminal shroud kit, Use with 200 amp fusible switch, 3 per kit	FBJ200

*Note: Line side terminal shroud supplied standard with switch.

merseN Fusible Disconnects

FB Series Series - Build a Complete Switch

30 Amp Compact

STEP 1

Choose a switch body



Switch body

Ultra-Compact Switch Body	Ampere Rating	Hp @ Voltage	Interrupt Capacity (kA)
FBCC30CDT*	30	15 Hp @ 480V	50
FBJ30CDT*	30	15 Hp @ 480V	50

*Note: Lugs, shrouds and screens are integrated into these switches.

Use these fuses

Switch	Fuse Type	ADC Series Fuse	Current Range
FBCC30CDT	CC	EDCC	1-30
		HCTR	
		HCLR	
FBJ30CDT	J	JDL	1-30

STEP 2

Choose a handle



Short handles

Handle	Description
HDPB	Pistol, Black, NEMA 1, 3R, 12, Type D
HDPR	Pistol, Red/yellow, NEMA 1, 3R, 12, Type D



Standard handles

Handle	Description
HGPB	Pistol, Black, NEMA 1, 3R, 12, Type G.
HGPB4	Pistol, Black, NEMA 4, 4X, Type G.
HGPR	Pistol, Red /yellow, NEMA 1, 3R, 12, Type G
HGPR4	Pistol, Red /yellow, NEMA 4, 4X, Type G

Direct handles

Handle	Description
HADB1*	Direct mount handle for FBCC30CDT, Black
HADB2	Direct mount handle for FBJ30CDT, Black

*Note: Switch Handle will not switch to "test" position with Aux contacts and ACHCD holder installed. Handle will switch to "ON" position.

NFPA 79 compliant handle

Optional Handle	Description
HADB6	NFPA 79-compliant, allows operation and padlocking the switch when door is open. Red. Shaft not required.

STEP 3

Choose a shaft



Short handle shafts

Shaft	Description
SD200-5	Type D, 7.9" (200 mm) long
SD320-5	Type D, 12.6" (320 mm) long



Standard handle shafts

Shaft	Description
SG120-5	Type G, 4.7" (120 mm) long
SG200-5	Type G, 7.9" (200 mm) long
SG320-5	Type G, 12.6" (320 mm) long

Shafts not used with direct handles

Select a standard handle

Note: Short handles cannot be used with NFPA 79 compliant handle.

STEP 4

Choose your Accessories

Part Number	Description	Use With
ACHCD	Auxiliary contact holder. Maximum capacity: 4 switches. REQUIRED when using AC3 or AC4.	FBCC30CDT, FBJ30CDT
AC3	Auxiliary contact. One N.O. contact. 10 A. 600 VAC. REQUIRES ACHCD. Please purchase separately.	All FB Series switches
AC4	Auxiliary contact. One N.C. contact. 10 A. 600 VAC. REQUIRES ACHCD. Please purchase separately.	All FB Series switches



Mersen Fusible Disconnects

FB Series - Build a Complete Switch

30 Amp to 200 Amp

STEP 1 Choose a switch body



Switch body

Switch	Ampere Rating	Hp @ Voltage	Interrupt Capacity (kA)
FBJ30*	30	15 Hp @ 480V	200
FBJ60*	60	30 Hp @ 480V	200
FBJ100**	100	60 Hp @ 480V	200
FBJ200***	200	125 Hp @ 480V	200

*Note: Screws, shrouds and lugs integrated into switch

**Note: Line side shroud included with this switch. Use terminal lug kit TL100 and TS100FB shroud, sold separately, for load side.

***Note: Line side shroud included with this switch. Use terminal lug kit TL200 and TS200FB shroud, sold separately, for load side

Use these fuses

Switch	Fuse Type	ADC Series Fuse	Current Range
FBJ30	J	JDL	1-30
FBJ60	J	JDL	35 - 60
FBJ100	J	JDL	70 - 100
FBJ200	J	JDL	125 - 200

STEP 2 Choose a handle



Standard handles

Handle	Description
HGPBL	Pistol, Long Black, NEMA 1, 3R, 12; 4.98" long, Type G
HGPB4L	Pistol, Long Black, NEMA 4, 4X, 4.98" long, Type G
HGPRL	Pistol, Long Red/yellow NEMA 1, 3R, 12; 4.98" long, Type G
HGPR4L	Pistol, Long Red/yellow NEMA 4, 4X, 4.98" long, Type G



NFPA 79 compliant handle

Optional Handle	Description
HADB8	NFPA 79-compliant, allows operation and padlocking the switch when door is open. Red. Shaft not required.

STEP 3 Choose a shaft



Standard handle shafts

Shaft	Description
SG200-10	Type G, 7.9" (200 mm) long
SG320-10	Type G, 12.6" (320 mm) long
SG400-10	Type G, 15.7" (400 mm) long

Select a standard shaft

STEP 4 Choose your Accessories



Part Number	Description	Use With
ACH	Auxiliary contact holder. Maximum capacity: 8 switches. REQUIRED when using AC3 or AC4.	FBJ30 thru FBJ200
AC3	Auxiliary contact. One N.O. contact. 10 A. 600 VAC. REQUIRES ACH. Please purchase separately.	All FB Series switches
AC4	Auxiliary contact. One N.C. contact. 10 A. 600 VAC. REQUIRES ACH. Please purchase separately.	All FB Series switches
TL100	Terminal lug kit, Aluminum, tin-plated, 2/0 to #14, 6 lugs per kit	FBJ100
TL200	Terminal lug kit, Aluminum, tin-plated, 3/0 to #6, 6 lugs per kit	FBJ200
TS100FB*	Terminal shroud kit, Use with 100 amp fusible switch, 3 shrouds per kit. Use on line or load side.	FBJ100
TS200FB*	Terminal shroud kit, Use with 200 amp fusible switch, 3 shrouds per kit. Use on line or load side.	FBJ200

*Note: Line side terminal shroud supplied standard with switch.

Mersen Fusible Disconnects

FB Series Specifications

FB Series Fusible Disconnects Technical Specifications According to UL 508, cUL and CSA						
Specifications						
Part Number	FBCC30CDT	FBJ30CDT	FBJ30	FBJ60	FBJ100	FBJ200
Price	<--->	<--->	<--->	<--->	<--->	<--->
Rated Operating Voltage (VAC)	600	600	600	600	600	600
Short Circuit Rating (kA)	50	50	200	200	200	200
Fuse Type (if fusing separately)	CC	J	J	J	J	J
Fuse Rating (A) (if fusing separately)	30	30	30	60	100	200
Maximum UL Horsepower/Maximum Motor FLA Current, Three Phase						
208V	5/17.5	5/17.5	5/17.5	15/48.5	25/78.5	50/150
240V	7.5/22	7.5/22	7.5/22	15/42	30/80	60/154
480V	15/21	15/21	15/21	30/40	60/77	125/156
600V	20/22	20/22	20/22	50/52	75/77	150/144
DC 125V	3/25	3/25	3/25	3/25	7.5/58	15/112 ¹
DC 250V	5/20	5/20	5/20	10/38	20/38	40/140 ¹
Switch Operating Torque lb-in	21	21	88	88	88	106
Wire Size Range AWG (# wire holes per lug)	#10 - #14 (1)	#10 - #14 (1)	#3 - #10 (1)	#3 - #10 (1)	2/0 #14 (1)	3/0 #6 (1)
Terminal Lugs Kit (# of lugs per kit)	Integral	Integral	Integral	Integral	Optional (6)	Optional (6)
Wire Tightening Torque lb-in	27	27	58	58	120	200
Net Weight lb(kg)	1.3(0.60)	1.3(0.60)	4.9(2.20)	4.9(2.20)	6.2(2.80)	6.6(2.99)

Note 1: 3 pole in series

IEC 947-3 Technical Specifications for Front Operation							
Part Number	Unit	FBCC30CDT	FBJ30CDT	FBJ30	FBJ60	FBJ100	FBJ200
Rating	A	32CD	32CD	32	60	100	200
Rated Insulation Voltage Ui (V)	V	800	800	750	750	750	750
Rated Impulse Voltage (Uimp)	kV	8 kV	8 kV	8 kV	8 kV	8 kV	8 kV
Operation Current Ie (A)							
	*IEC Utilization Category	Unit					
400 VAC	AC 22A	A	32	32	32	63	100
	AC 23A	A	32	32	32	63	100
690 VAC	AC 22A	A	32	32	32	63	100
	AC 23A	A	32	32	32	63	100
Motor Power (kW)							
400 VAC	AC 23A	A	15	15	15	30	51
500 VAC	AC 23A	A	18.5	18.5	18.5	40	63
690 VAC	AC 23A	A	25	25	25	55	90
Max. Peak Let-through Current (gG)	kA peak	5.5	5.5	17.6	17.6	22	32
Connection							
Minimum Cu cable section	mm ²	6	6	6	10	25	50
Minimum CU busbar section	mm ²	—	—	—	—	—	—

*Note: See Appendix for IEC utilization categories.

Mersen Fusible Disconnects

FB Series Dimensions



Company Information

Systems Overview

Programmable Controllers

Field I/O

Software

C-more & other HMI

Drives

Soft Starters

Motors & Gearbox

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temperature Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

Terminal Blocks & Wiring

Power

Circuit Protection

Enclosures

Tools

Pneumatics

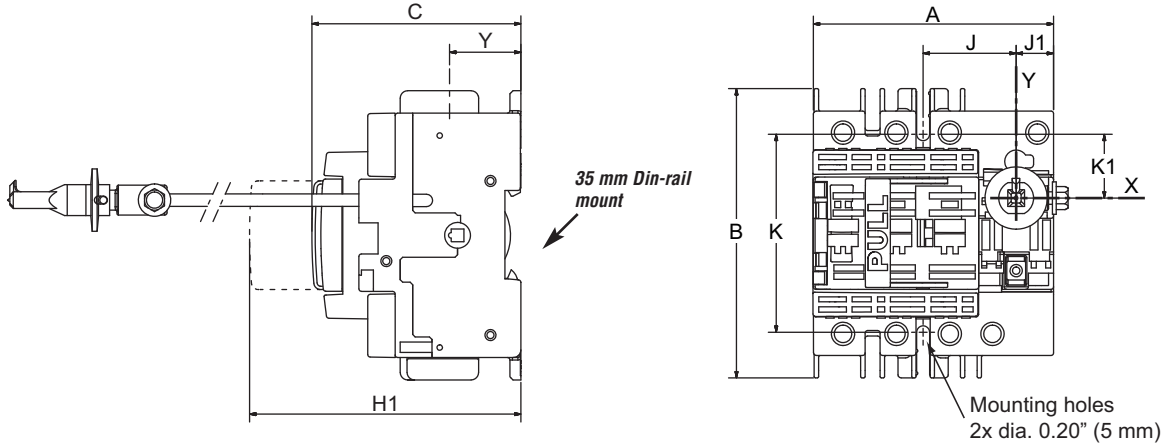
Safety

Appendix

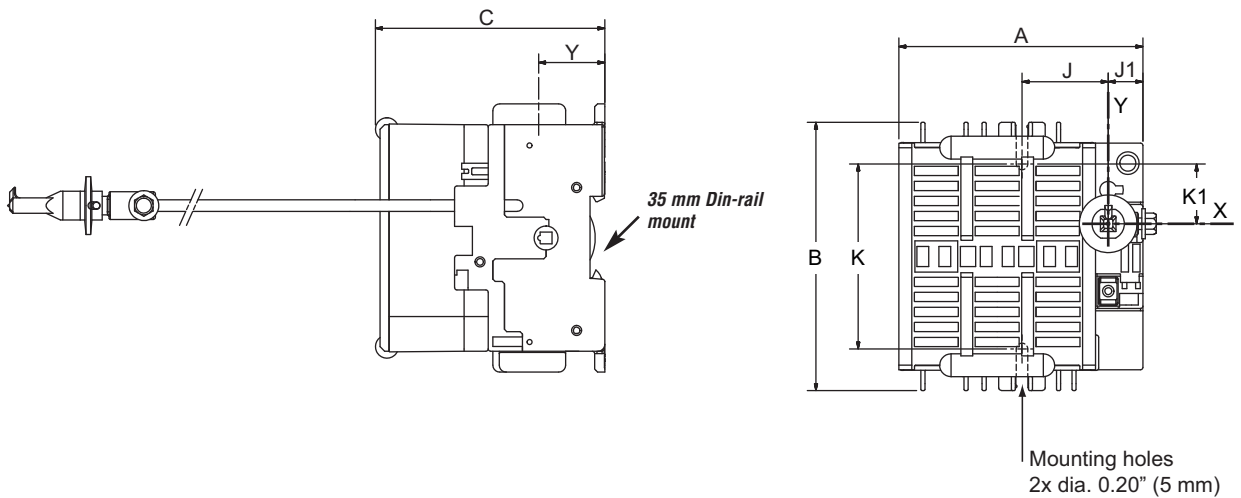
Product Index

Part # Index

FBCC30CDT



FBJ30CDT

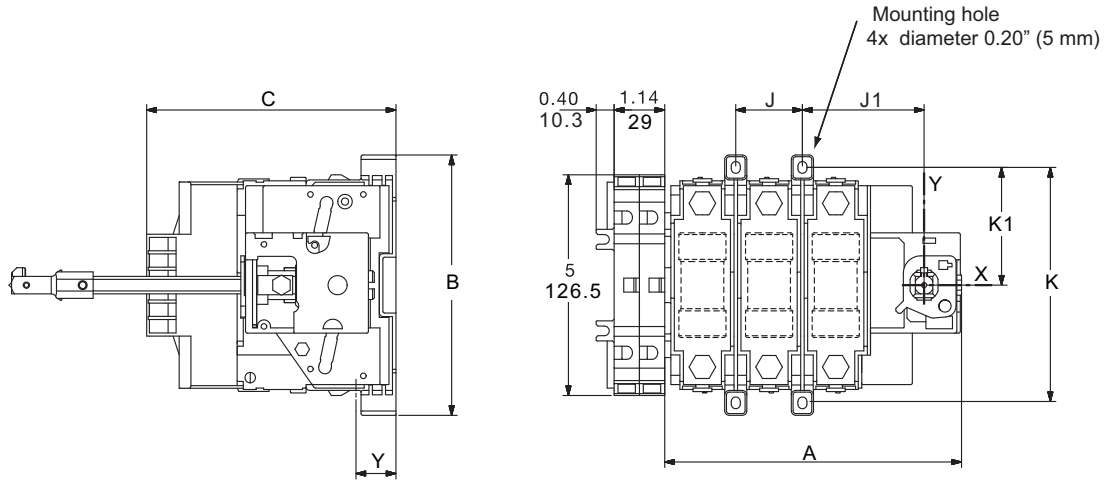


Compact Design Part Number	Number of Poles	A		B		C		H		H1		H2	H3	J		J1		K		K1		Y	
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
FBCC30CDT	3	3.78	96	4.56	116	3.28	83.5	-	-	5.19	132	-	-	1.47	37.5	0.59	15	3.13	79.5	1	25.5	1.12	28.5
FBJ30CDT	3	4.13	105	4.56	116	3.89	99	-	-	-	-	-	-	1.47	37.5	0.59	15	3.30	84	1	25.5	1.12	28.5

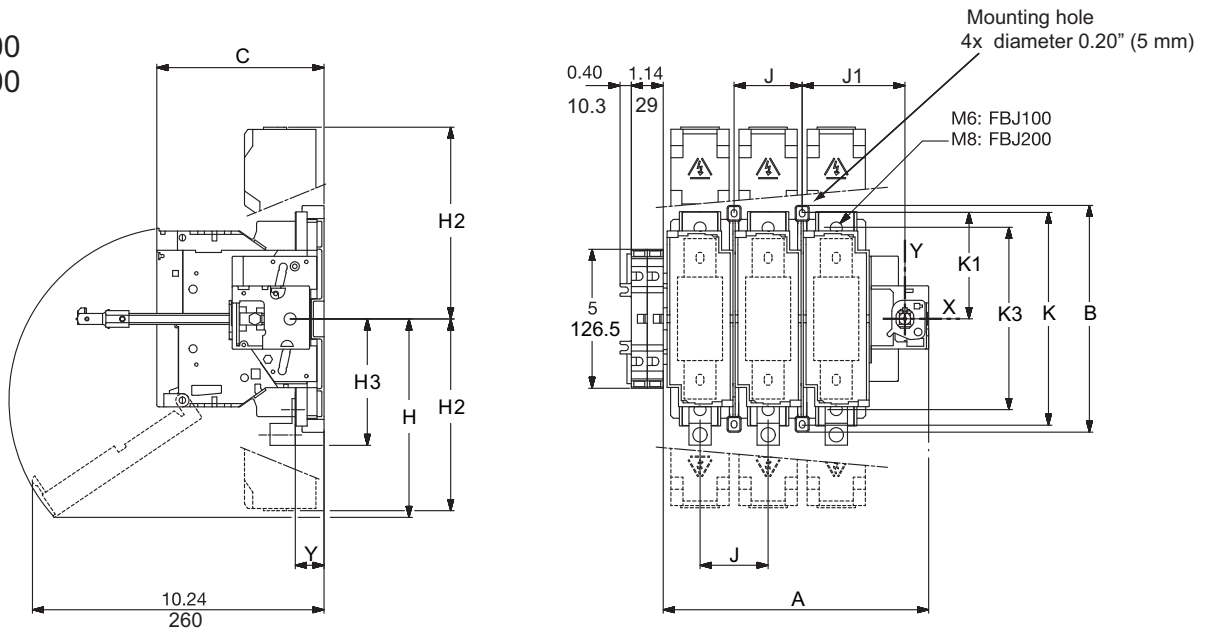
Mersen Fusible Disconnects

FB Series Dimensions

FBJ30
FBJ60



FBJ100
FBJ200



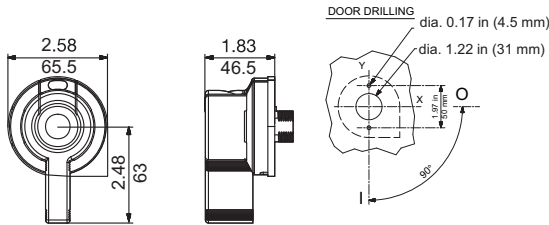
Rating	Number of Poles	A		B		C		H		H2		H3		J		J1		K		K1		K3		Y	
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
FBJ30CDT	3	5.63	143	5.87	149	3.89	99	-	-	-	-	-	-	1.14	29	2.38	60.5	5.31	135	2.63	66.5	-	-	1.21	31
FBJ30	3	6.72	171	5.87	149	5.62	143	-	-	-	-	-	-	1.5	38	2.75	69.5	5.31	135	2.63	66.5	-	-	0.95	24.5
FBJ60	3	6.72	171	5.87	149	5.62	143	-	-	-	-	-	-	1.5	38	2.75	69.5	5.31	135	2.63	66.5	-	-	0.95	24.5
FBJ100	3	8.26	210	7.19	182.5	5.63	143	4.06	103	5.27	134	3.66	93	2.05	52	3.28	83.5	6.61	168	3.28	83.5	5.55	141	1	26
FBJ200	3	9.44	240	8.13	206.5	6	152	7.27	184.5	6.87	174.5	4.79	122	2.44	62	3.68	93.5	7.56	192	3.75	95.5	6.53	166	1.03	26

MERSEN Fusible Disconnects

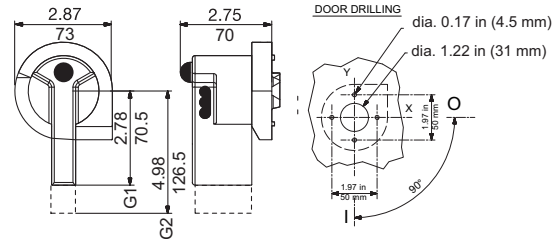
FB Series Dimensions

Handles for external front operation

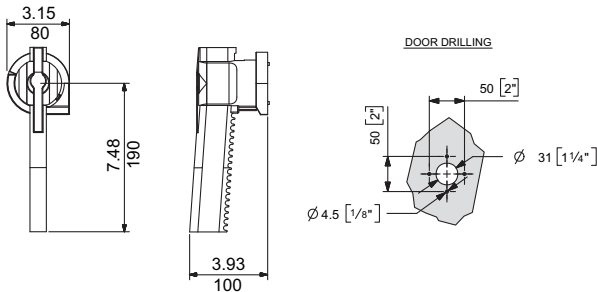
PISTOL HANDLE TYPE D (short)



PISTOL HANDLE TYPE G (standard)

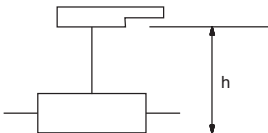


PISTOL HANDLE TYPE H (long)



Backplate-to-door distance with shaft extension (in/mm)

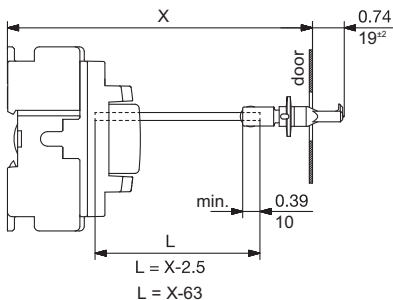
MINIMUM DISTANCE (in/mm)



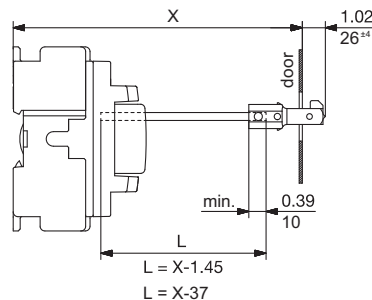
<i>h</i> Minimum Dimension	Handle Type D		Handle Type G	
	in	mm	in	mm
FBCC30CDT	5.12	130	4.14	105
FFBJ30CDT	5.91	150	4.73	120
FBJ30	–	–	6.50	165
FBJ60	–	–	6.50	165
FBJ100	–	–	6.50	165
FBJ200	–	–	6.89	175

SHAFT TRIMMING LENGTH (=DIMENSION L)

PISTOL HANDLE TYPE D
FBCC30CDT - FBJ30CDT

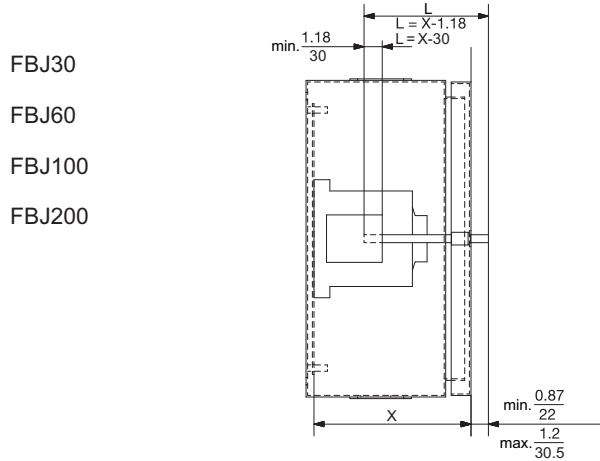


PISTOL HANDLE TYPE G
FBCC30CDT - FBJ30CDT



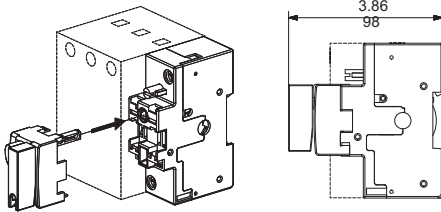
Mersen Fusible Disconnects FB Series Dimensions

Backplate-to-door distance with shaft extension, continued (in/mm)

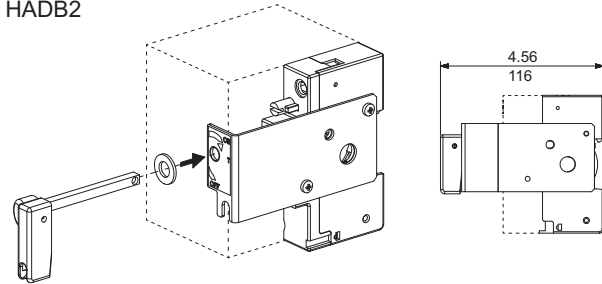


Handles for direct front operation

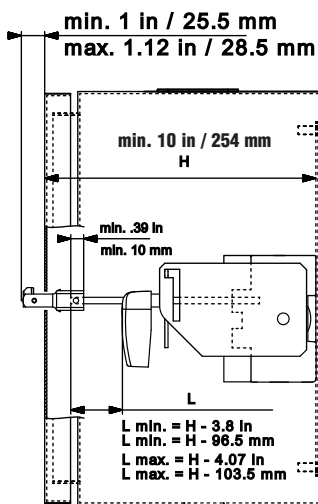
HADB1



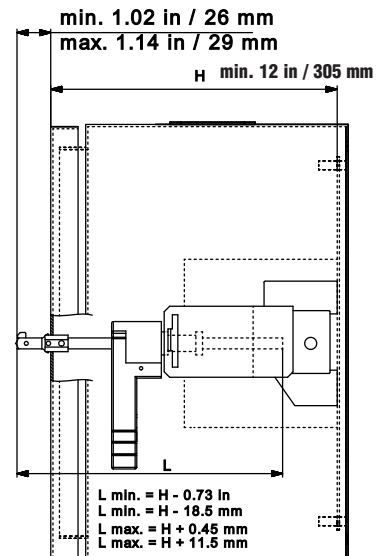
HADB2



HADB6



HADB8



Note: Minimum enclosure dimension from backplate to door is 8" for HADB6 and 10" for HADB8. These are backplate to door dimensions. The actual enclosures will be 10" and 12" in depth, respectively.

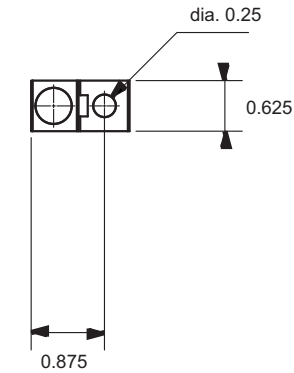
MERSEN Fusible Disconnects

FB Series Dimensions

Terminal lugs

TL100

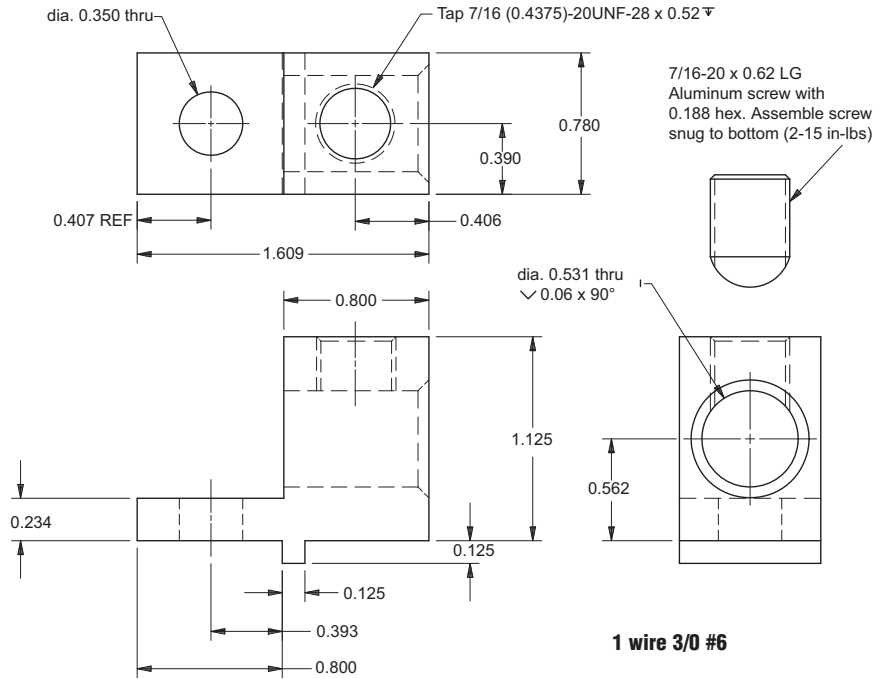
Use with FBJ100



1 wire 2/0 #14

TL200

Use with FBJ200



1 wire 3/0 #6

dimensions = inches



Company Information

Systems Overview

Programmable Controllers

Field I/O

Software

C-more & other HMI

Drives

Soft Starters

Motors & Gearbox

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temperature Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

Terminal Blocks & Wiring

Power

Circuit Protection

Enclosures

Tools

Pneumatics

Safety

Appendix

Product Index

Part # Index