

Operating Mechanisms, Disconnect Switches, and Door-Closing Mechanisms Selection Guide

Class 9421, 9422, 9423



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SQUARE D
GROUPE SCHNEIDER

Note that all Square D switches and circuit breaker mechanisms are lockable in the OFF position, and can be used to comply with OSHA requirements for an Energy Isolation Device.



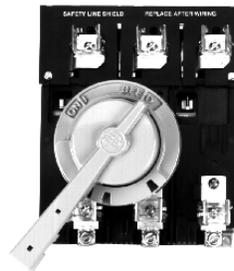
9422 Circuit Breaker Cable Operator



9421L Circuit Breaker Mechanism



9422R Circuit Breaker Mechanism



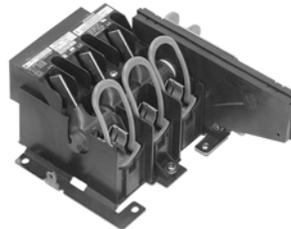
NEMA-Style Rotary Handle Disconnect Switch



Loadbreak Switch



9423 Door-Closing Mechanisms



NEMA-Style Flange Handle Disconnect Switch



IEC-Style Disconnect Switch

How to Order

To Order, Specify:	Catalog Number	
	Class	Type
1. Class Number 2. Type Number — OR — 1. Class Number 2. Type Number of Switch Body 3. Type Number of Shaft Extension 4. Type Number of Handle Accessories 5. Type Number of Door Interlock Plate 6. Type Number of Any Desired Accessories	9421	LN1



VARIO™ Loadbreak Switches

VARIO™ Loadbreak Switches act as enclosure disconnects when short circuit protection is provided upstream of the switch (if short circuit protection is not provided upstream, use Class 9421 Type N, Class 9422 Type T, and D10 disconnect switches). Type V switches are UL Listed as manual motor controllers.



Loadbreak Switch

Ampere Size	Horsepower Ratings			Shaft Size	3 Pole Switch Body		Complete Switch▲
	240 V	480 V	600 V		Type	Type	
20	5.5	10	10	6mm	V1	VCCF1	
25	7.5	15	20	6mm	V2	VCCF2	
45	15.5	30	40	8mm	V3	VCCF3	
63	20.5	40	50	8mm	V4	VCCF4	
100	25.5	50	60	8mm	V5	VCCF5	
115	30.5	60	75	8mm	V6	VCCF6	

▲ Complete switch includes handle operator, shaft, door interlock plate, and line terminal shroud.

Non-Metallic Enclosures

The VARIO Loadbreak Switch is also offered as an enclosed switch, which is made of corrosion resistant material suitable for IP55 environments. The 3-pole version makes the VARIO Loadbreak Switch ideal for manual motor control applications. They are compact, easy to wire and connect, and come undrilled to allow variable cable entry positions. Note that these enclosures do not pass the UL Burn Test, which means that these versions are not UL Listed.



Non-Metallic Enclosure

Ampere Size	Horsepower Ratings			IP55-PVC 3-Pole
	240V	480V	600V	Type
20	5	10	10	VC1GU
25	7.5	15	20	VC2GU
45	15	30	40	VC3GU
63	20	40	50	VC4GU
100	25	50	60	VC5GU
115	30	60	75	VC6GU

Metallic Enclosures

The V1 and V2 come in metallic enclosures (NEMA Type 1, 4, 4X, and 12). The NEMA Type 1 is supplied with conduit knockouts top and bottom. A VZ7 auxiliary contact can be factory installed in these metallic enclosures by adding Form X11 to the catalog number. A VZ20 auxiliary contact can be factory installed in these enclosures by adding Form X20 to the catalog number. Two VZ7 auxiliary contacts may be factory installed by adding Form X22 (2 N.O. and 2 N.C.).



Metallic Enclosure

Ampere Size	Horsepower Ratings			NEMA Type 1	NEMA Type 12	NEMA Type 4/4X▼
	240V	480V	600V	Type	Type	Type
20	5	10	10	V1G30	V1A30	V1W30
25	7.5	15	20	V2G30	V2A30	V2W30

▼ For indoor use only. The NEMA 4/4X enclosure is made of #304 stainless steel with 3/4 in T&B stainless steel hubs on the top and bottom.

Handle Operators

Single-Hole Operator (22.5 or 30.5 mm diameters)



Single-Hole Operator

Description	Type	Handle Operators		Gasket for IP65 Protection (5 per package)	Black Legend Silver Plate
		Red Bezel Yellow Handle	Black Bezel and Handle		
		Type	Type		
Square 60 x 60 Protection IP65 (up to 3 padlocks)	V1, V2 (6mm shaft)	KCD1PZ	KAD1PZ	KZ66	KZ15

Drilling dimensions are shown on the next page.

Open Product

Metallic Enclosure



File E164864
CCN: NLRV

File E42243
CCN: NLRV



File LR81630
Class 3211-05

File LR25490
Class 3211-05



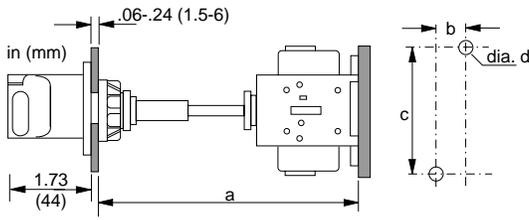
Class 9421 Devices



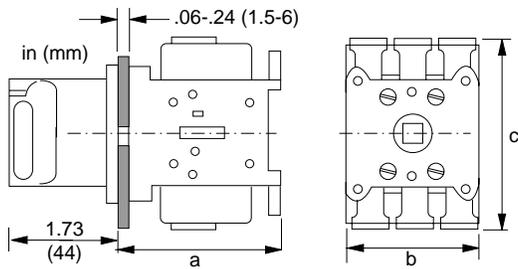
Four-Hole Operator
(All except KBF3PZ
and KDF3PZ)



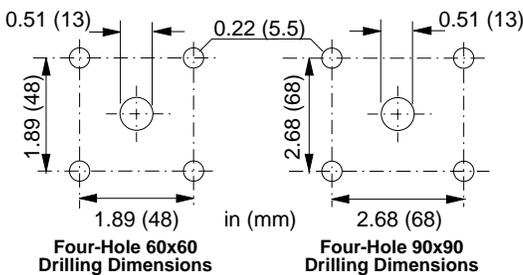
Four-Hole Operator
(KBF3PZ or KDF3PZ)



Rear/Panel-Mounting Switch Body

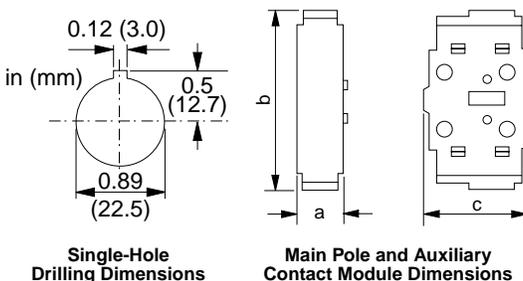


Single- and Four-Hole Mounting Dimensions



Four-Hole 60x60
Drilling Dimensions

Four-Hole 90x90
Drilling Dimensions



Single-Hole
Drilling Dimensions

Main Pole and Auxiliary
Contact Module Dimensions

Four-Hole Operator

Description	Type	Handle Operators		Gasket for IP65 Protection (5 per package)	Black Legend Silver Plate
		Red Bezel Yellow Handle	Black Bezel and Handle		
		Type	Type	Type	Type
Square 60 x 60 Protection IP65 (up to three padlocks)	V1, V2 (6mm shaft)	KCF1PZ	KAF1PZ	KZ66	KZ15
	V3, V4 (8mm shaft)	KCF2PZ	KAF2PZ		
Square 90 x 90 Protection IP65 (up to three padlocks)	V3-V6 (8mm shaft)	KCF3PZ	KAF3PZ	KZ67	-
Square 90 x 90 Protection IP65	V3-V6 (8mm shaft)	KDF3PZ	KBF3PZ	KZ67	-

Dimensions for VARIO Loadbreak Switches

Rear/Panel-Mounting Switch Body Dimensions

Type	Shaft Extension	Dimensions – inches (millimeters)			
		a	b	c	d
V1 to V2	VZ17	5.5-13.0 (140-330)	0.60 (15)	2.4 (60)	0.17 (4.2)
	VZ30	5.5-16.9 (140-430)			
V3 to V4	VZ18	5.5-12.6 (140-320)	0.79 (20)	2.4 (60)	0.20 (5.2)
	VZ31	5.5-16.5 (140-420)			
V5 to V6	VZ18	6.5-13.8 (165-350)	1.20 (30)	3.9 (100)	0.28 (7.0)
	VZ31	6.5-17.7 (165-450)			

■ The door interlock plate included with VCCF has the same drilling as the handle operators.

Single- and Four-Hole Mounting Dimensions

Type	Dimensions – inches (millimeters)			Weight Approx. lbs.
	a	b	c	
V1 to V2*	2.83 (72)	2.17 (55)	2.91 (74)	0.44
V1 to V2	2.36 (60)	2.17 (55)	2.91 (74)	0.44
V3 to V4	2.56 (65)	2.36 (60)	3.27 (83)	1.10
V5 to V6	3.54 (90)	3.54 (90)	4.92 (125)	2.00

* Dimensions for single-hole mounting.

Main Pole Module Dimensions

Type	Dimensions – inches (millimeters)			Weight Approx. lbs.
	a	b	c	
VZ1 to VZ2	0.63 (16)	2.9 (74)	1.38 (35)	0.10
VZ3 to VZ4	0.79 (20)	3.3 (83)	1.80 (46)	0.22

Auxiliary Contact Module Dimensions

Type	Dimensions – inches (millimeters)			Weight Approx. lbs.
	a	b	c	
VZ7	0.79 (20)	2.56 (65)	1.91 (48.5)	0.11
VZ20	0.79 (20)	2.56 (65)	1.91 (48.5)	0.11



Accessories for VARIO Loadbreak Switches

Shaft Extension and Door Interlock



Shaft Extension Kit

For Switch Type	Maximum Panel Depth	Shaft Extension Kit	Door Interlock Plate
V1, V2	13.0"	VZ17	KZ32
V3, V4	12.6"	VZ18	KZ74
V5, V6	13.8"	VZ18	KZ74
V1, V2	16.9"	VZ30	KZ32
V3, V4	16.5"	VZ31	KZ74
V5, V6	17.7"	VZ31	KZ74



Terminal Shroud for Main Switch VZ8



Terminal Shroud for Auxiliary Contact VZ29

Accessories

For Switch Type	Line Side Terminal Shroud for Main Switch	Terminal Shroud for Main Pole Module	Terminal Shroud for Auxiliary Contact
V1, V2	VZ8	VZ26	VZ29
V3, V4	VZ9	VZ27	VZ29
V5, V6	VZ10	VZ28	VZ29

Add-On Contact Modules



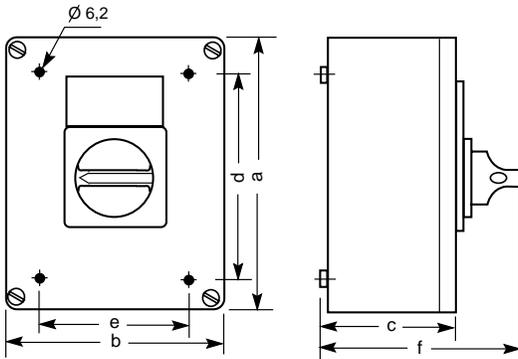
Add-On Contact Modules

For Switch Type	Main Pole Module	Auxiliary Contacts	
		1 N.O. & 1 N.C. ▲	2 N.O.
V1	VZ1	VZ7	VZ20
V2	VZ2	VZ7	VZ20
V3	VZ3	VZ7	VZ20
V4	VZ4	VZ7	VZ20
V5	—	VZ7	VZ20
V6	—	VZ7	VZ20

▲ Early Break, Late Make.

Dimensions for Enclosed VARIO Loadbreak Switches

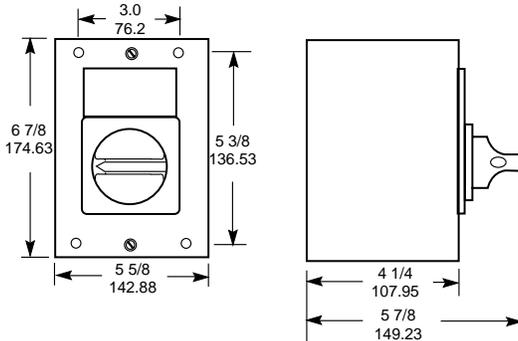
Non-Metallic Enclosed Switch Dimensions



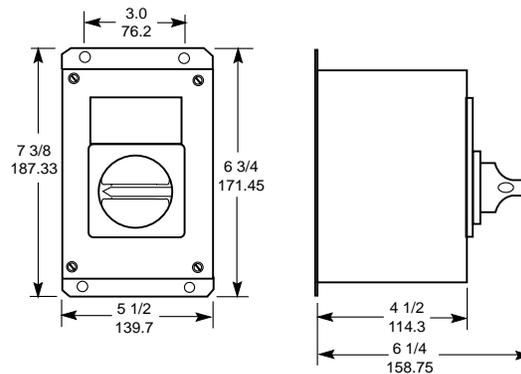
Non-Metallic Enclosed Switch

Type	No. of Poles	Dimensions – inches (millimeters)					
		a	b	c	d	e	f
VC1GU - VC2GU	3	6.7 (170)	4.1 (105)	3.2 (82)	4.8 (122)	2.1 (53)	5.0 (128)
VC3GU - VC4GU	3	6.7 (170)	5.3 (135)	3.3 (85)	5.1 (130)	3.7 (95)	5.2 (131)
VC5GU - VC6GU	3	11.0 (280)	8.6 (220)	5.0 (126)	7.9 (201)	7.5 (190)	8.0 (203)

Metallic Enclosed Switch Dimensions



Metallic Enclosed Switch: NEMA Type 1 (V1G30, V2G30)



NEMA Type 4, 4X, 12 (V1W30, V2W30, V1A30, V2A30)



Class 9421 Devices

Class 9421 IEC-Style Door-Mounted Disconnect Switches (Type N)

The 9421 Type N is an IEC-style door-mounted disconnect switch with onboard fusing for Class CC and Class J fuses. The switch is UL Listed and CSA certified, and provides service entrance spacing, 100KA withstandability and Type 2 coordinated protection when used with Square D and Telemecanique starters in accordance with fuse selection tables.

Each installation will require a disconnect switch, handle, and shaft.



Class 9421 Disconnect Switch



Auxiliary Contact



Handle



Terminal Shields and Fuse Covers



Auxiliary Components

 File E14839
CCN: NKCR2

 File CR75721
Class 3211 02

Class 9421 Disconnect Switches

Disconnect Switch Size	Maximum Horsepower Ratings								Fuse Selection	Switch Type
	1 Phase AC		3 Phase AC				DC			
	115V	230V	200V	230V	460V	575V	125V	250V		
30A	2	3	7.5	7.5	15	20	3	5	Unfused 30A Class CC 30A Class J	NC1
	.75	2	5	5	10	10	2	3		NC2
	2	3	7.5	7.5	15	20	3	5		NC3
60A	3	10	15	15	30	50	5	10	Unfused 60A Class J	ND1
	3	10	15	15	30	50	5	10		ND3



File E152727
CCN: WJA2



File LR75721
Class 3211 02

Handles

Disconnect Switch Size	Fuse Selection	Handle Color	Handle Selection NEMA Type	Handle Kit
				Type
30A, 60A	All	Red/Yellow	1/12/4/4X	NW2
		Black	1/12/4/4X	NW2B

Shafts and Shorting Links

Disconnect Switch Size	Enclosure Depth (max.)	Shaft Length	Shaft Kit
			Type
30A, 60A	10"	166mm	NS16
	18"	360mm	NS36
30A			Shorting Links▲
			NSL30
60A			NSL60

▲ 3 per package; replacement for 9421 NC1 & 9421 ND1

Terminal Shields and Fuse Covers

Disconnect Switch Size		Type
30A	Terminal Shield▼	NTS30
	CC Fuse Cover*	NCF30
	J Fuse Cover	NJF30
60A	Terminal Shield▼	NTS60
	J Fuse Cover*	NJF60
	Auxiliary Contact Shield★	NXSH

▼ Terminal shield for line or load side.

* 30A CC fuse cover and 60A J fuse cover are also used for non-fusible applications.

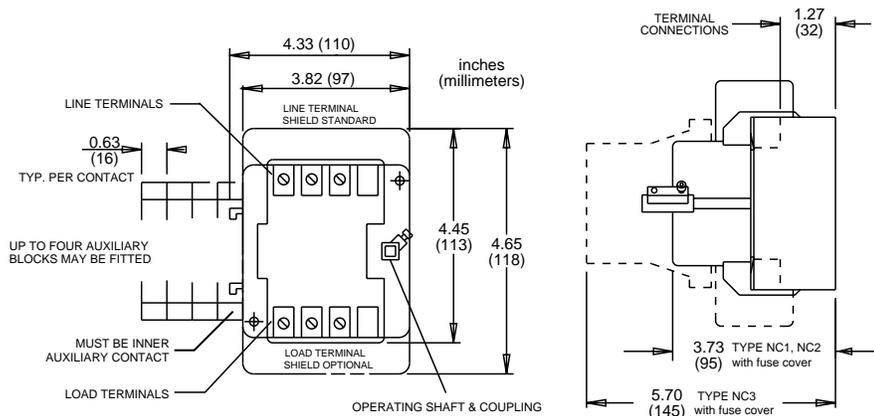
★ 2 per package

Auxiliary Contacts

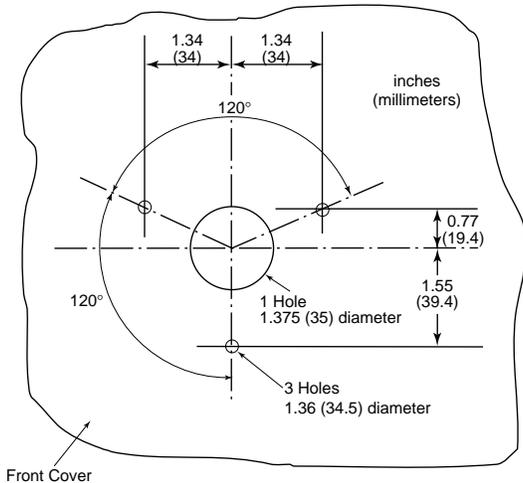
Disconnect Switch Size				Auxiliary Contact Kit
				Type
30A, 60A	SPDT	N.O.	Inner	NAX10
	SPDT	N.O.	Outer	NBX10
	DPDT	2 N.O.	Inner	NAX20
	DPDT	2 N.O.	Outer	NBX20

NOTE: Each installation requires a disconnect switch, handle, and shaft. Further, the first auxiliary contact block that is used must be an inner block (maximum is 1 inner and 3 outer blocks).

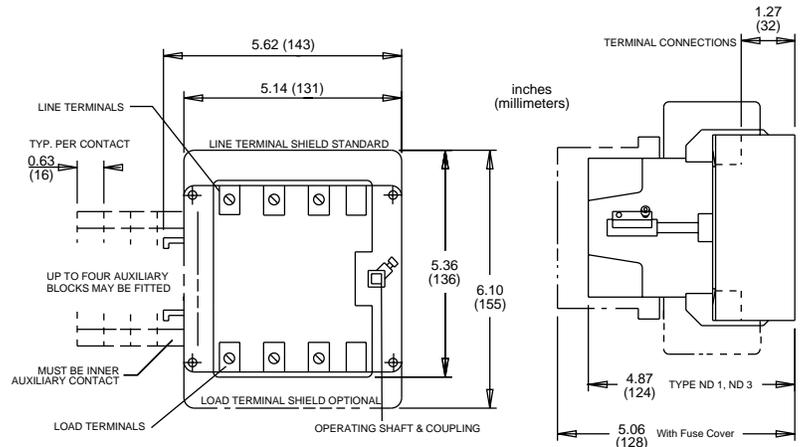
Outline Dimensions and General Location Information for 30 Amp Type N Disconnect Switches



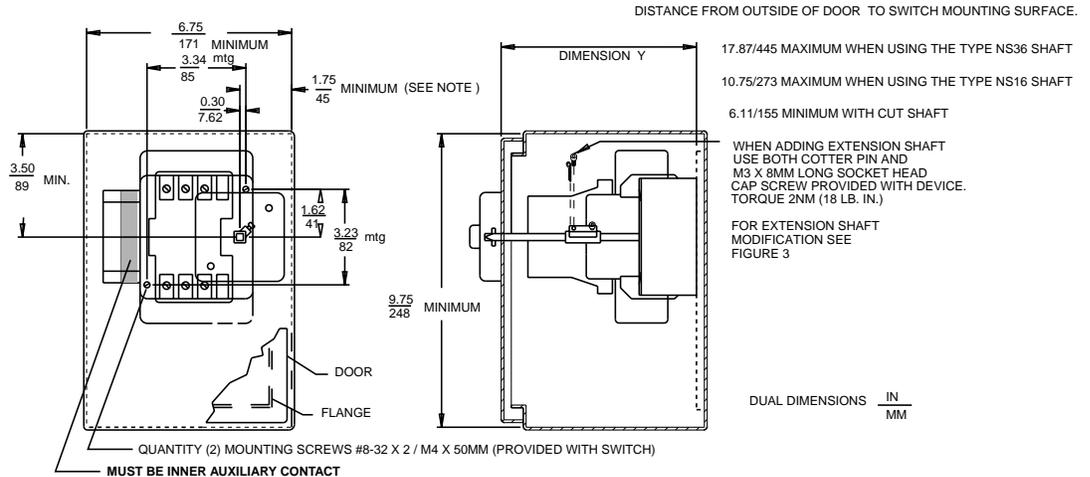
Outline Dimensions and General Location Information for 60 Amp Type N Disconnect Switches



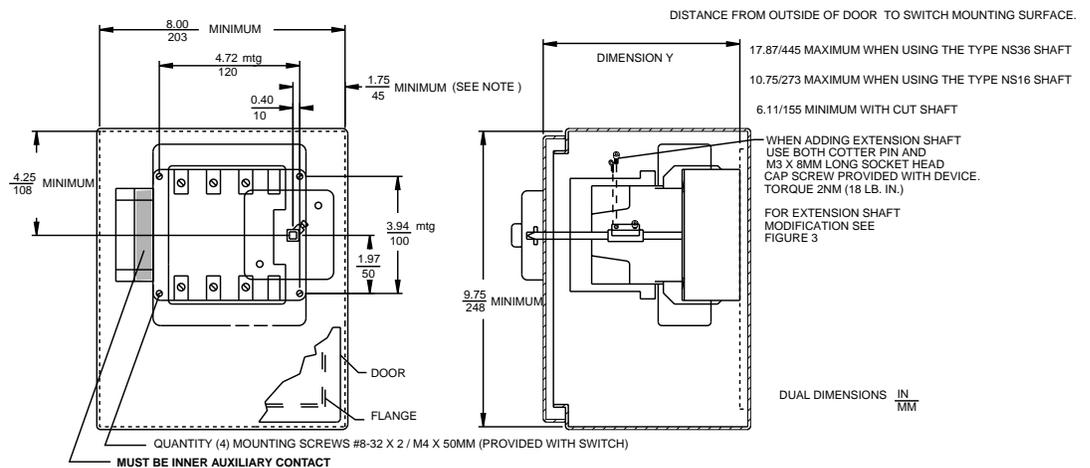
Drilling Dimensions for 9421 NW2/NW2B



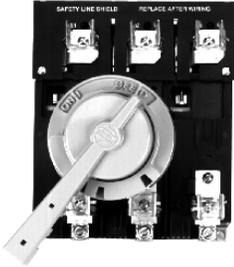
9421 30 Amp NC Mounting Dimensions



9421 60 Amp ND Mounting Dimensions



Class 9421 Devices



NEMA-Style Door-Mounted Disconnect Switches (D10)

A complete installation includes a D10 disconnect switch, D11 handle operator, and D12 fuse clip kit. The D10 accepts Class H, K, J, or R fuses — or can be used for non-fusible applications. The D10 disconnect switch is operated by a cast metal handle operator that is lockable in the OFF position and de-featable in the ON position. Other features of the D10 disconnect switch are:

- **High I²T rating** – This switch meets automotive and heavy-industry requirements.
- **Longer contact life** – Quick-make, quick-break, cam-trip, and spring-loaded action throws the switch into the ON position under pressure. This provides a quick-break when switching to the OFF position. The double-break contact principle also assures longer life and exceptional interrupting capacity.
- **Visible contact indication** – Clear ON and OFF markings plus actual contact positions are both visible through pole “windows.”
- **Fuse-mounting flexibility** – Fuse clips are mounted on top of the switch, providing a compact unit. Interchangeable fuse-clip kits are available for quick adaptation to other ratings.
- **Dead-front construction** – When the switch is in the OFF position, all visible current-carrying parts are de-energized, thus providing additional safety for maintenance electricians.
- **Auxiliary interlocks** – One- or two-pole interlocks can be added to the disconnect switch when required.

Switch

 File E52369
CCN: WHTY2

 File LR15705
Class 4652 04

Disconnect Switches (Without Fuse Clips or Shorting Straps)

600V – Without Service Entrance Rating						
Starter NEMA Type Size	Switch Rating Amperes	Max. Horsepower Rating†				Catalog Number
		120V	200-240V	480V	600V	
0 - 1	30	5	10	20	25	D10S1
2	60	10	20	40	50	D10S2
3	100	15	30	60	75	D10S3
4	200	25	50	100	100	D10S4

600V – With Service Entrance Rating						
Starter NEMA Type Size	Switch Rating Amperes	Max. Horsepower Rating †				Catalog Number
		120V	200-240V	480V	600V	
0 - 1	30	5	10	20	25	D10S1H
2	60	10	20	40	50	D10S2H
3	100	15	30	60	75	D10S3H
4	200	25	50	100	100	D10S4H

† Non-fused rating; with fuses, depends on fuse size.

Auxiliary Switch

 File E78403
CCN: NKCR

Rotary Handle Operating Mechanism

Rotary Handle Operator Kits – Door Mounting NEMA Type 1, 3, 3R, 4, 12			For MC Switches
Description	Amp Rating	Enclosure Interior Depth - Inches	Catalog Number
Variable Depth Rotary Operator	30, 60	5 ⁵ / ₈ - 6	D11SF4
	100, 200		D11SF10
		6 - 10	D11SF16
		10 - 16	D11SF16

Auxiliary Electrical Interlock (for mounting on 30A – 200A switch)

Block Description (With Switch Contacts Open)	Catalog Number
1 Normally Open	D11N0
1 Normally Closed	D11NC
1 Normally Open and 1 Normally Closed	D11N0C
2 Normally Open	D11N00
2 Normally Open and 2 Normally Closed	D11N0C2

● One block per switch.

Handle

 File E52369
CCN: WHTY2

Fuse Clip Kits

D10 Switch Size	Fuse-Clip Rating▲			Catalog Number
	Amperes	AC Volts	Type	
30 A	No Fuse			D12CO1
	0 - 30	250	H, K	D12C21
		250	R	D12CR21
		600	H, K	D12C61
		600	R	D12CR61
	0 - 30	600	J	D12CJ1
		600	J	D12CJ1
	31 - 60	250	H, K	D12C22
		600	H, K	D12C62
		600	R	D12CR62
600		J	D12CJ2	
61 - 100	250	H, K	D12C23	
60 A	No Fuse			D12D02
	0 - 30	250	R	D12DR21
		600	H, K	D12D61
		600	R	D12DR61
	31 - 60	250	H, K	D12D22
		250	R	D12DR22
	31 - 60	600	H, K	D12D62
		600	R	D12DR62
	31 - 60	600	J	D12DJ2
		600	J	D12DJ2
61 - 100	250	H, K	D12D23	
	600	H, K	D12D63★	
	600	J	D12DJ3	
100 A	No Fuse			D12E03
	31 - 60	250	H, K	D12E22
		600	H, K	D12E62
	61 - 100	250	H, K	D12E23
		250	R	D12ER23
	61 - 100	600	H, K	D12E63
		600	R	D12ER63
	61 - 100	600	J	D12EJ3
		600	J	D12EJ3
	101 - 200	250	H, K	D12F24
600		H, K	D12F64	
600		J	D12FJ4	
250		H, K	D12F25★	
600		J	D12FJ5★	
200 A	No Fuse			D12F04
	61 - 100	600	H, K	D12F63
		250	H, K	D12F24
	101 - 200	250	R	D12FR24
		600	H, K	D12F64
	101 - 200	600	R	D12FR64
		600	J	D12FJ4
	201 - 400	250	H, K	D12F25★
		250	H, K	D12FR25★
		600	H, K	D12F65★
600		R	D12FR65★	
600		J	D12FJ5★	

▲ Continuous current should not exceed switch rating (size). Fuse clip kits should be sized to accommodate inrush.

★ Cannot be used with service entrance rated switch.



MC Switch Interrupting and Withstandability Ratings

Switch Rating Amperes	Interrupting Rating Amperes Symmetrical 600 Vac, 3 PH	Withstandability I ² T (Amperes ² seconds)
30	1,200	.38 x 10 ⁶
60	1,800	1.28 x 10 ⁶
100	2,000	2.62 x 10 ⁶
200	3,600	5.25 x 10 ⁶

NOTE: These switches are for motor circuit applications.

Lug Data

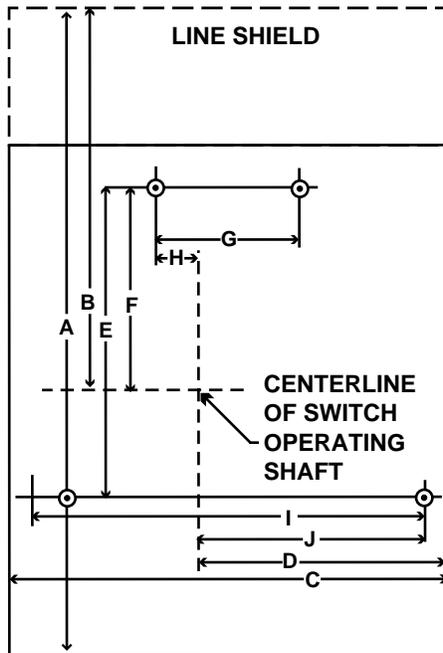
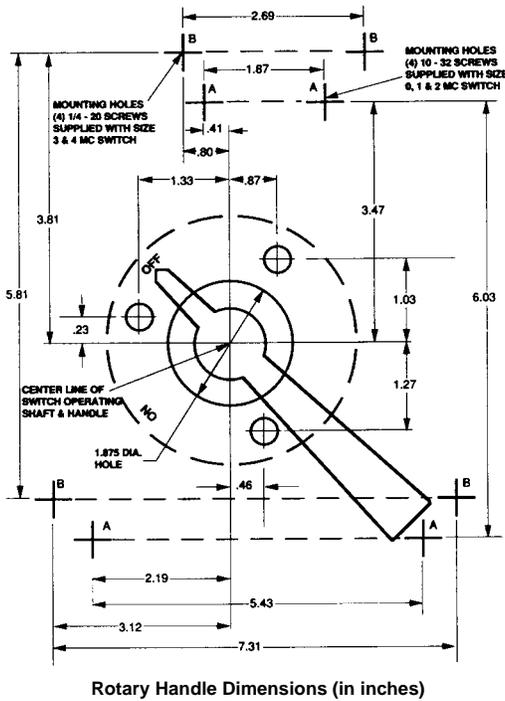
Switch Rating	Number Per Pole	Wire Range	Wire Type
30	1	#14 - #8	Cu
60		#14 - #4	Cu
100		#14 - #1/0	Al - Cu
200		#6 - 250 MCM	Al - Cu

Switch Dimensions (in inches)

Switch Size	Length		Width		Mounting Hole Dimensions						Depth	
	A	B	C	D	E	F	G	H	I	J	K†	L■
30	7 ⁵ / ₁₆	4 ¹⁵ / ₃₂	5 ⁷ / ₈	3 ¹⁵ / ₃₂	6	3 ¹⁵ / ₃₂	1 ⁷ / ₈	1 ³ / ₃₂	5 ⁷ / ₁₆	3 ¹ / ₄	4 ³ / ₃₂	4 ¹¹ / ₃₂
60	7 ⁵ / ₁₆	4 ¹⁵ / ₃₂	5 ⁷ / ₈	3 ¹⁵ / ₃₂	6	3 ¹⁵ / ₃₂	1 ⁷ / ₈	1 ³ / ₃₂	5 ⁷ / ₁₆	3 ¹ / ₄	4 ¹¹ / ₃₂	4 ¹¹ / ₃₂
100	9 ²⁷ / ₃₂	5 ¹¹ / ₃₂	8 ³ / ₁₆	4 ⁵ / ₈	5 ¹³ / ₁₆	3 ¹³ / ₁₆	2 ¹¹ / ₁₆	5 ¹ / ₆₄	7 ⁵ / ₁₆	4 ³ / ₁₆	5 ²³ / ₃₂	4 ²⁷ / ₃₂
200	12 ³ / ₁₆	7 ⁷ / ₃₂	8 ³ / ₁₆	4 ⁵ / ₈	5 ¹³ / ₁₆	3 ¹³ / ₁₆	2 ¹¹ / ₁₆	5 ¹ / ₆₄	7 ⁵ / ₁₆	4 ³ / ₁₆	5 ²³ / ₃₂	4 ²⁷ / ₃₂

† Maximum depth with largest fuse.

■ Depth including insulating barrier on service entrance switches



Class 9421 Devices



3" Handle Assembly



Standard Handle Assembly

Class 9421 Type L Circuit Breaker Mechanisms

Type L door-mounted, variable-depth operating mechanisms feature heavy duty, all metal construction with trip indication. All can be padlocked in the "OFF" position when the enclosure door is open. Further, the handle assemblies can be locked "OFF" with up to three padlocks, which also locks the door closed. (The 3" handle accepts one padlock.)

Complete Kits

Complete kits are rated for NEMA Type 1, 3R and 12 enclosures, and a door-drilling template is supplied to ease installation. They include a handle assembly, operating mechanism, and shaft assembly.

Complete Kit Does Not Include Circuit Breaker.			Includes: Operating Mechanism Standard 6" Handle Standard Shaft Kit		Includes: Operating Mechanism Standard 6" Handle Long Shaft Kit		Includes: Operating Mechanism Short 3" Handle Long Shaft Kit	
Use With			Type	Mounting Depth▲ Min.-Max.	Type	Mounting Depth▲ Min.-Max.	Type	Mounting Depth▲ Min.-Max.
Circuit Breaker or Interrupter Type	Number of Poles	Frame Size (A)						
GJL	3	75, 100	LG1	5 ¹ / ₂ -10 ¹ / ₄	LG4	5 ¹ / ₂ -20 ⁷ / ₈	LG3	5 ¹ / ₂ -20 ⁷ / ₈
FAL, FCL, FHL	2-3	100	LN1	5 ¹ / ₂ -10 ⁷ / ₁₆	LN4	5 ¹ / ₂ -21	LN3	5 ¹ / ₂ -21
KAL, KCL, KHL	2-3	250	LP1	6 ¹ / ₄ -11 ³ / ₁₆	LP4	6 ¹ / ₄ -21 ³ / ₄	LP3	6 ¹ / ₄ -21 ³ / ₄
LAL, LHL, Q4L	2-3	400	LR1	6 ⁵ / ₁₆ -10 ⁷ / ₈	LR4	6 ⁵ / ₁₆ -21 ¹ / ₂	3" handles are not recommended for use with these circuit breakers.	
MEL, MXL	2-3	800	LT1†	7 ³ / ₁₆ -11 ⁵ / ₈	LT4†	7 ³ / ₁₆ -22 ¹ / ₄		
MAL, MHL	2-3	1000	LT1†	7 ³ / ₁₆ -11 ⁵ / ₈	LT4†	7 ³ / ₁₆ -22 ¹ / ₄		
NAL, NCL, NEL, NXL	2-3	1200	LX1†	8 ¹ / ₄ -12 ³ / ₄	LX4†	8 ¹ / ₄ -23 ³ / ₈		

▲ Mounting depth measured from circuit breaker mounting surface (control panel) to outside of enclosure door in inches.
 † Types LT1, LT4, LX1, and LX4 include an 8" handle rather than a 6" handle.

Component Parts

Component parts kits are rated for NEMA Type 1, 3, 3R, 4, 4X, and 12 enclosures. All handle assemblies are painted (the handle is flat black and the base ring is silver).



Operating Mechanism (includes lockout)

Use With			3" Handle Assemblies Type 1, 3R, 12	Std. Handle Assemblies Type 1, 3R, 12	Operating Mechanism Includes Lockout	Standard Shaft (Support Bracket Not Required)		Long Shaft (Support Bracket Included)	
Circuit Breaker or Interrupter Type	No. of Poles	Frame Size (Amps)	Type	Type	Type	Mounting Depth■ Min.-Max.	Type	Mounting Depth■ Min.-Max.	Type
GJL	3	75 100	LH3	LH6	LG7	5 ¹ / ₂ -10 ⁷ / ₁₆	LS8	5 ¹ / ₂ -21	LS12
FAL, FCL, FHL	2-3	100	LH3	LH6	LF1	5 ¹ / ₂ -10 ⁷ / ₁₆	LS8	5 ¹ / ₂ -21	LS12
KAL, KCL, KHL	2-3	250	LH3	LH6	LK1	6 ¹ / ₄ -11 ³ / ₁₆	LS8	6 ¹ / ₄ -21 ³ / ₄	LS12
LAL, LHL, Q4L	2-3	400	3" handles are not recommended for use with these circuit breakers.	LH6	LL1	6 ⁵ / ₁₆ -10 ⁷ / ₈	LS8	6 ⁵ / ₁₆ -21 ¹ / ₂	LS10
MEL, MXL	2-3	800		LH8	LM1	7 ³ / ₁₆ -11 ⁵ / ₈	LS8	7 ³ / ₁₆ -22 ¹ / ₄	LS10
MAL, MHL	2-3	1000		LH8	LM1	7 ³ / ₁₆ -11 ⁵ / ₈	LS8	7 ³ / ₁₆ -22 ¹ / ₄	LS10
NAL, NCL, NEL, NXL	2-3	1200		LH8	LX7	8 ¹ / ₄ -12 ³ / ₄	LS8	8 ¹ / ₄ -23 ³ / ₈	LS10

■ Mounting depth measured from circuit breaker mounting surface (control panel) to outside of enclosure door in inches.

NEMA Type 3 and 4 Handle Assemblies*

Use With			Standard Handle Assemblies		Special 3" Version	
Circuit Breaker or Interrupter Type	No. of Poles	Frame Size (Amps)	NEMA Type 3, 4 (Painted)	NEMA Type 3, 4, 4X (Chrome Plated)	NEMA Type 3, 4 (Painted)	NEMA Type 3, 4, 4X (Chrome Plated)
			Type	Type	Type	Type
GJL	3	75	LH46	LC46	LH43	LC43
FAL, FCL, FHL	2-3	100	LH46	LC46	LH43	LC43
KAL, KCL, KHL	2-3	250	LH46	LC46	LH43	LC43
LAL, LHL, Q4L	2-3	400	LH46	LC46	3" handles are not recommended for use with these circuit breakers.	
MEL, MXL	2-3	800	LH48	LC48		
MAL, MHL	2-3	1000	LH48	LC48		
NAL, NCL, NEL, NXL	2-3	1200	LH48	LC48		

* Due to gasketing, NEMA Type 3 & 4 handle assemblies are NOT trip indicating.



IEC-Style Handle (for use with 9421LG8, see page 11)



File E62922
CCN: DIHS2

IEC-Style Operating Mechanisms

Circuit Breaker or Interrupter Type	Type 1, 4, 4X, 12		Operating Mechanism [▲]	Extension Shafts		
	Color	Type		Mounting Depth		Type
GJL	Red/Yellow	NW3	LG8	Min. 6 ¹ / ₈	Max. 10 ³ / ₄	NS16
	Black	NW3B		Min. 6 ¹ / ₈	Max. 17 ⁷ / ₈	NS336●

▲ Includes lockout.

● Contains support bracket.

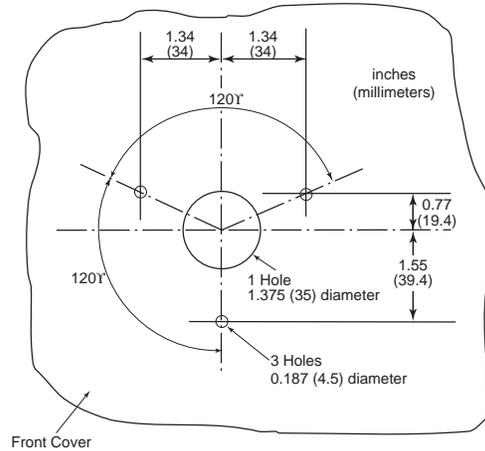


File E14839
CCN: NKCR2



File LR75721
Class 3211 02

Drilling Dimensions for 9421 NW3/NW3B



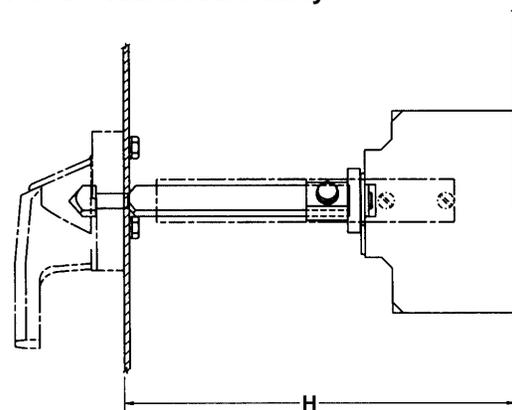
Electrical Interlock Kits — Class 9999

Optional accessory for use with 9421L operating mechanisms; see page 14 for electrical rating.

Description	Class	Type
Single Pole Double Throw	9999	R47
Double Pole Double Throw	9999	R48

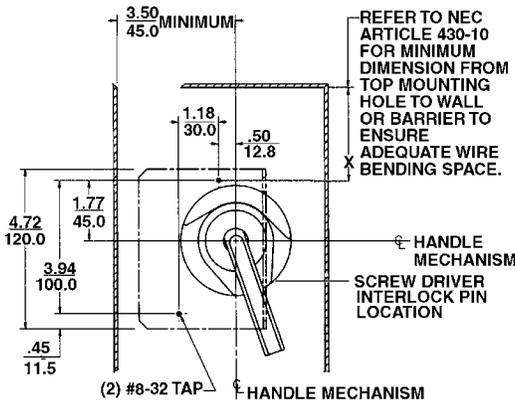
NOTE: Not used with GJL, NAL, NCL, NEL, or NXL; use field-installable circuit breaker interlocks instead.

Dimensions for 3.5" Handle Assembly

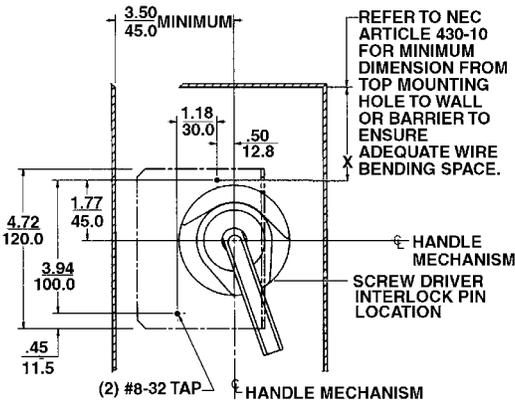


Determination of Shaft Length

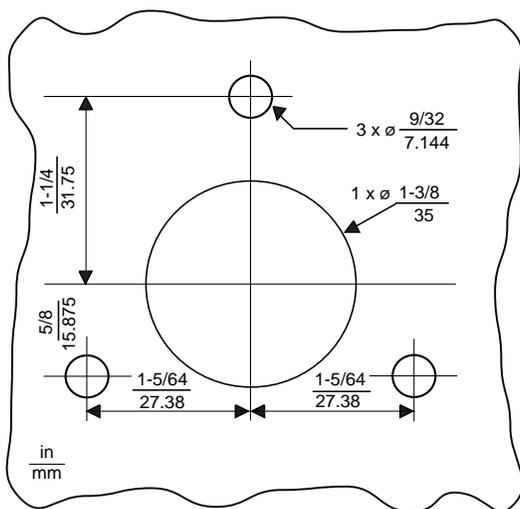
Class	Type	Shaft Length Formula	Standard Shaft		Long Shaft	
			Min	Max	Min.	Max.
9421	LG7, LG1, LG4, LG3	L = H - 2.5 (64)	5.5 (140)	10.25 (250)	5.5 (140)	20.85 (530)



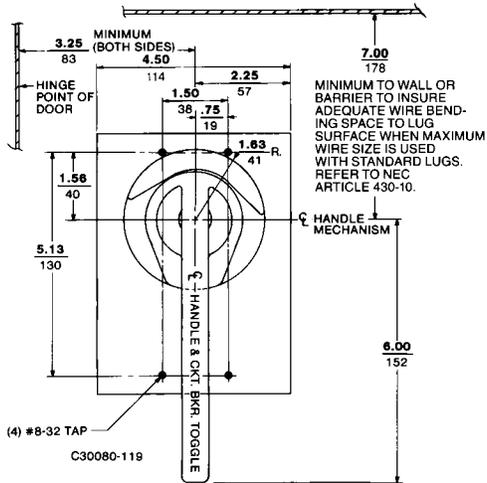
Panel Drilling for GJL Circuit Breaker and Operating Mechanism



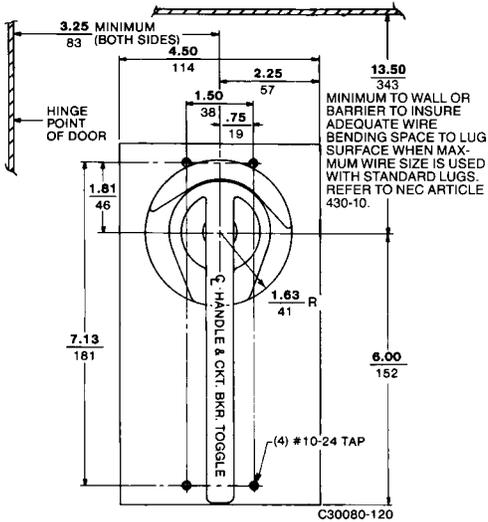
Panel Drilling for 9421 LC and LH Handles



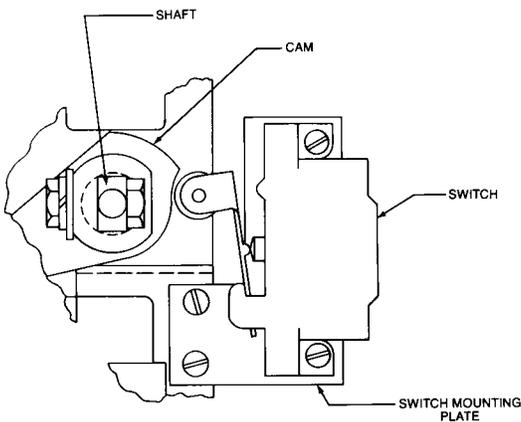
Class 9421 Devices



Panel Drilling for FAL, FCL, FHL Circuit Breakers and Operating Mechanisms

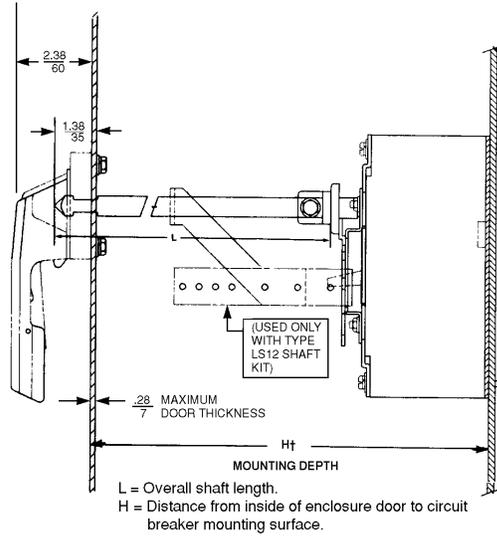


Panel Drilling for KAL, KCL, KHL Circuit Breakers and Operating Mechanisms



Electrical Interlock Location – FA, KA

Dimensions for FAL, FCL, FHL, KAL, KCL, KHL Circuit Breakers and Circuit Interrupters



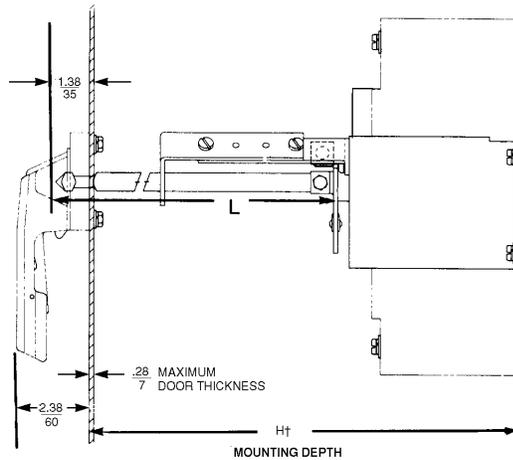
L = Overall shaft length.
H = Distance from inside of enclosure door to circuit breaker mounting surface.

Determination of Shaft Length

Class	Type	Shaft Length Formula	Standard Shaft		Long Shaft	
			Min	Max	Min.	Max.
9421	LF1, LN1, LN3, LN4	$L = H - 2.88 (73)$	5.5 (140)	10.44 (265)	5.5 (140)	21.00 (533)
	LK1, LP1, LP3, LP4	$L = H - 3.63 (92)$	6.25 (159)	11.19 (284)	6.25 (159)	21.75 (552)

† Mounting depth measured from circuit breaker mounting surface (control panel) to outside of enclosure door.

Dimensions for LAL, LHL, Q4L Circuit Breakers and Circuit Interrupters



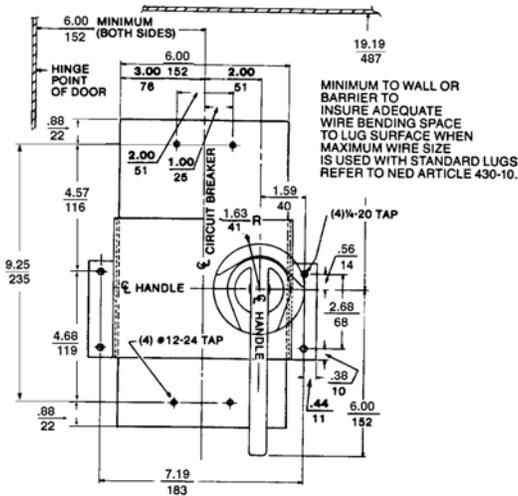
L = Overall shaft length.
H = Distance from inside of enclosure door to circuit breaker mounting surface.

Determination of Shaft Length

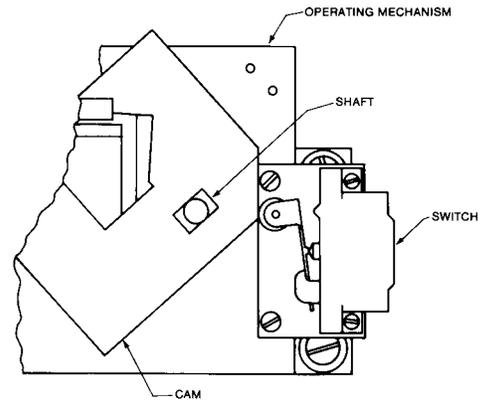
Class	Type	Shaft Length Formula	Standard Shaft		Long Shaft	
			Min	Max	Min.	Max.
9421	LL1, LR1, LR4	$L = H - 3.13 (79)$	6.31 (160)	10.88 (276)	6.31 (160)	21.50 (546)

† Mounting depth measured from circuit breaker mounting surface (control panel) to outside of enclosure door.

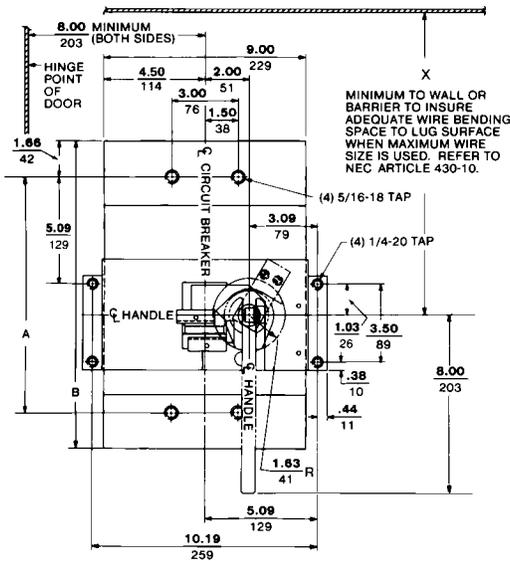
Electrical Interlock Location for LAL, LHL, Q4L Circuit Breakers and Operating Mechanisms



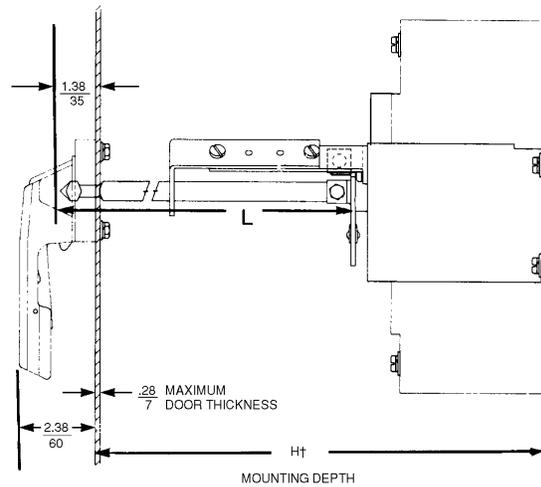
Panel Drilling for LAL, LHL, Q4L Circuit Breakers and Operating Mechanisms



Dimensions for MAL, MEL, MHL, MXL Circuit Breakers and Circuit Interrupters



Panel Drilling for MAL, MEL, MHL, MXL Circuit Breakers and Operating Mechanisms



L = Overall shaft length.
H = Distance from inside of enclosure door to circuit breaker mounting surface.

Determination of Shaft Length

Circuit Breaker Type	Dimensions - in (mm)	
	A	B
MAL, MHL	10.69 (272)	14.00 (356)
MEL, MXL	11.47 (291)	14.75 (375)

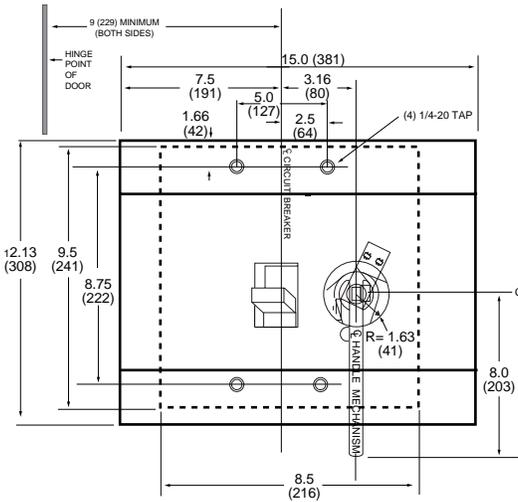
Class	Type	Shaft Length Formula	Standard Shaft		Long Shaft	
			Min	Max	Min.	Max.
9421	LM1, LT1, LT4	$L = H - 4.00$ (104)	7.18 (182)	11.63 (295)	7.18 (182)	22.25 (565)

† Mounting depth measured from circuit breaker mounting surface (control panel) to outside of enclosure door.

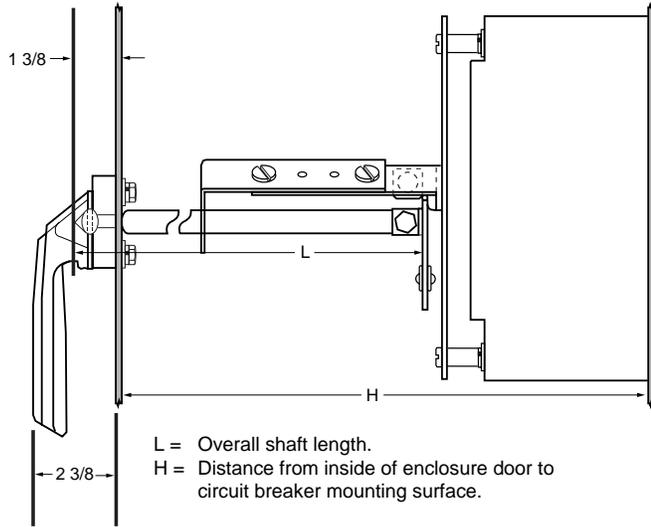


Class 9421 Devices

Dimensions for NAL, NCL, NEL, and NXL Circuit Breakers and Circuit Interrupters



Panel Drilling for NAL, NCL, NEL, NXL Circuit Breakers and Operating Mechanisms



Determination of Shaft Length

Class	Type	Shaft Length Formula	Standard Shaft		Long Shaft	
			Min	Max	Min.	Max.
9421	LX7, LX1, LX4	$L = H - 5.17$ (131)	8.25 (210)	12.75 (324)	8.25 (210)	23.38 (594)

Electrical Interlock Information Maximum Current Ratings

Class 9999 Type	Uses Class 9007 Type	Con-tacts	Contact Arrangement ^A	AC – 50 or 60 Hz								DC			
				Volts	Inductive 35% Power Factor				Contin-uous Carrying Amps	Resistive 75% Power Factor		Volts	Inductive and Resistive		
					Make		Break			Make and Break Amps	Contin-uous Carrying Amps		Make and Break Amps		Contin-uous Carrying Amps
					Amps	VA	Amps	VA					Single Throw	Double Throw	
R47	AB23	SPST SPDT	1 N.O. 1 N.C.	120	40	—	15	—	15	15	15	115	2.0	0.5	15
				240	20	—	10	—	15	15	15	230	0.5	0.2	15
				480	10	—	6	—	15	15	15	600	0.1	0.02	15
				600	8	—	5	—	15	15	15	—	—	—	—
R48	CB33	DPST DPDT	2 N.O. 2 N.C.	120	30	3600	3	360	10	10	10	115	1.0	0.2	10
				240	15	3600	1.5	360	10	10	10	230	0.3	0.1	10
				480	7.5	3600	0.75	360	10	10	10	600	0.1	—	10
				600	6	3600	0.60	360	10	10	10	—	—	—	10

^A Single pole snap switches that contain 2 double break contact elements (1 N.O. and 1 N.C.) must be used on circuits of the same polarity. Two pole snap switches contain two electrically separated sets of contact elements allowing use on circuits of opposite polarity. Each set contains 2 double break contact elements (1 N.O. and 1 N.C.) that must be used on circuits of the same polarity.

**Class 9422
Flange-Mounted, Variable-Depth, and Cable-Operated Disconnect Switches**

The Class 9422 Type TCF, TCN, TDF, TDN, TEF, TEN disconnect switches were designed for control panel installations. These switches include common switch profile 30 - 100A, interchangeable fuse clips 30 - 60A, ability to add fuse clip kits and cable mechanisms. They are compatible with 9422A and 9423, and are UL recognized and CSA certified.

Disconnect Switch Size	Variable Depth Mounting Range Min.-Max. (inches)	Maximum Horsepower Ratings					Fuse Type	Fuse Clip Rating (Amperes) Non-Interchangeable Type For Class H, J, K or R Fuses Only		Switch and Operating Mechanism Only — Does Not Include Handle Mechanism	Switch and Operating Mechanism and Handle Mechanism – Overpacked		
		AC Systems Volts (Motor Volts)				DC Using 2 Poles 250V Maximum		250V	600V		Type	Includes Type A1 Handle Mechanism	Includes Type A2 Handle Mechanism
		208 (200)	240 (230)	480 (460)	600 (575)								
30A	6 ⁵ / ₈ "-18"	7.5	7.5	15	20	5	None	—	TCN30	ATCN301	ATCN302		
							H, K, J, R	30	TCF30	ATCF301	ATCF302		
60A	6 ⁵ / ₈ "-18"	15	15	30	50	10	None	—	TDN60	ATDN601	ATDN602		
							H, K, J, R	30	TDF60	ATDF601	ATDF602		
								60	TDF63	ATDF631	ATDF632		
100A	6 ⁵ / ₈ "-18"	25	30	60	75	20	None	—	TEN10	ATEN101	ATEN102		
							H, K, J, R	100	TEF10	ATEF101	ATEF102		
200-400A	See 9422 TF and TG Disconnect Switches on page 17												



Class 9422 Replacement/Retrofit Fuse Clip Kits

Disconnect Switch Size	Switch Type	Fuse Type	Fuse Clip Rating (Amps)		Line and Load Fuse Clip Kit (includes load base and fusepullers)
			250V	600V	
30A	TCF30 TCN30 TCF33	H, K, J, R	30		TC30
			60	30	TC33
60A	TDN60	H, K, J, R	60	30	TC33
				60	TD63

Class 9999 Electrical Interlocks

Disconnect Switch Size	Switch Types	Electrical Interlock	
			Type
30A 60A 100A	TCF, TCN TDF, TDN TEF, TEN	SPDT*	TC10
		DPDT■	TC20
	BTCF, BTCN BTDF, BTDN BTEF, BTEN	SPDT*	TC11
		DPDT■	TC21

* 1 N.C. or 1 N.O. depending on wiring.
■ 2 N.C., 2 N.O. or 1 N.O., 1 N.C. depending on wiring.

Class R Fuse Clip Kits

Disconnect Switch Size	Switch Type	Fuse Type	Fuse Clip Rating (AIR)		Rejection Feature – Class R Kit
			250V	600V	Type▼
30A	TCF30	R	30		RFK03
	TCF33	R	60	30	RFK06
60A	TDF60	R	60	30	RFK06
	TDF63	R		60	RFK06H
100A	TEF10	R	100	100	RFK10

▼ No Class Number required.

Class 9422 Disconnect Switch Cable Operators (must purchase switch separately)

Disconnect Switch Size	Switch Types	Cable Mechanisms▲			Cable Mechanisms with A1 Handle for Types 1, 3, 3R, 12
		Total Cable Length	Length of Flexible Portion of Cable	Type	Type
30A, 60A, 100A	TCF, TCN TDF, TDN TEF, TEN	36"	22"	CFT30	CFT31
		48"	34"	CFT40	—
		60"	46"	CFT50	CFT51
		120"	106"	CFT10	CFT11

▲ Must purchase handle mechanism separately.

Switch



File E52639
CCN: WHTY2

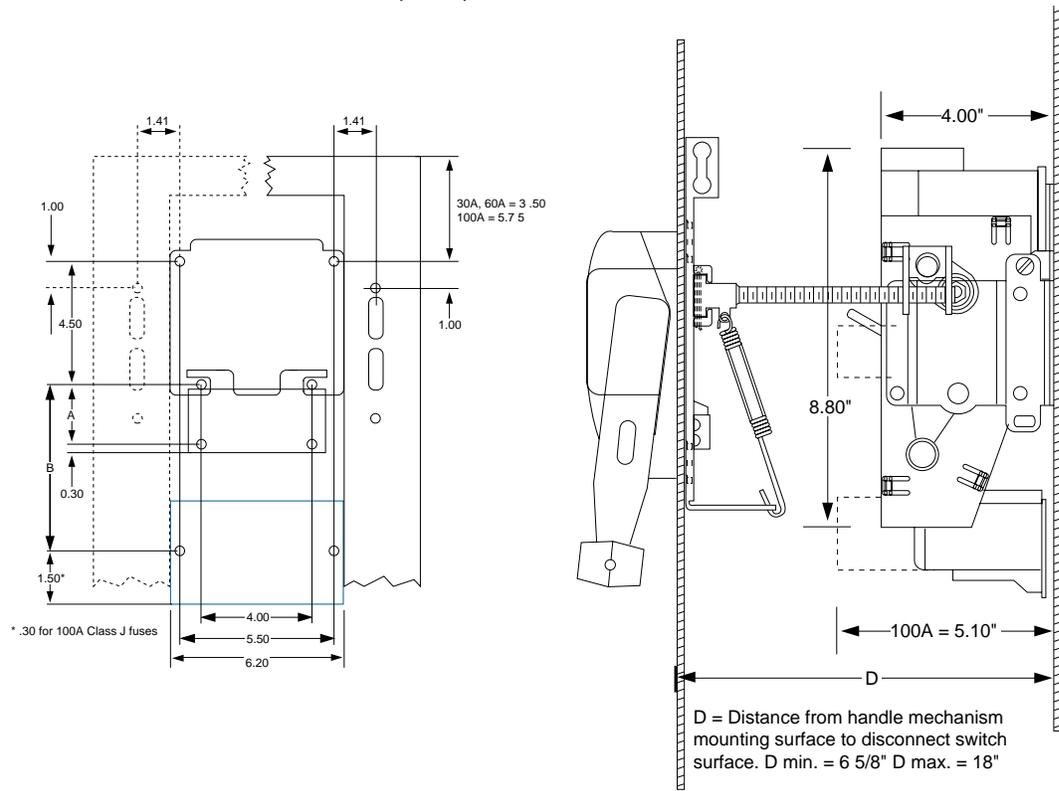


File LR44199
Class 4652 04



Class 9422 Devices

Class 9422 Dimensions for 30A, 60A, and 100A Switches



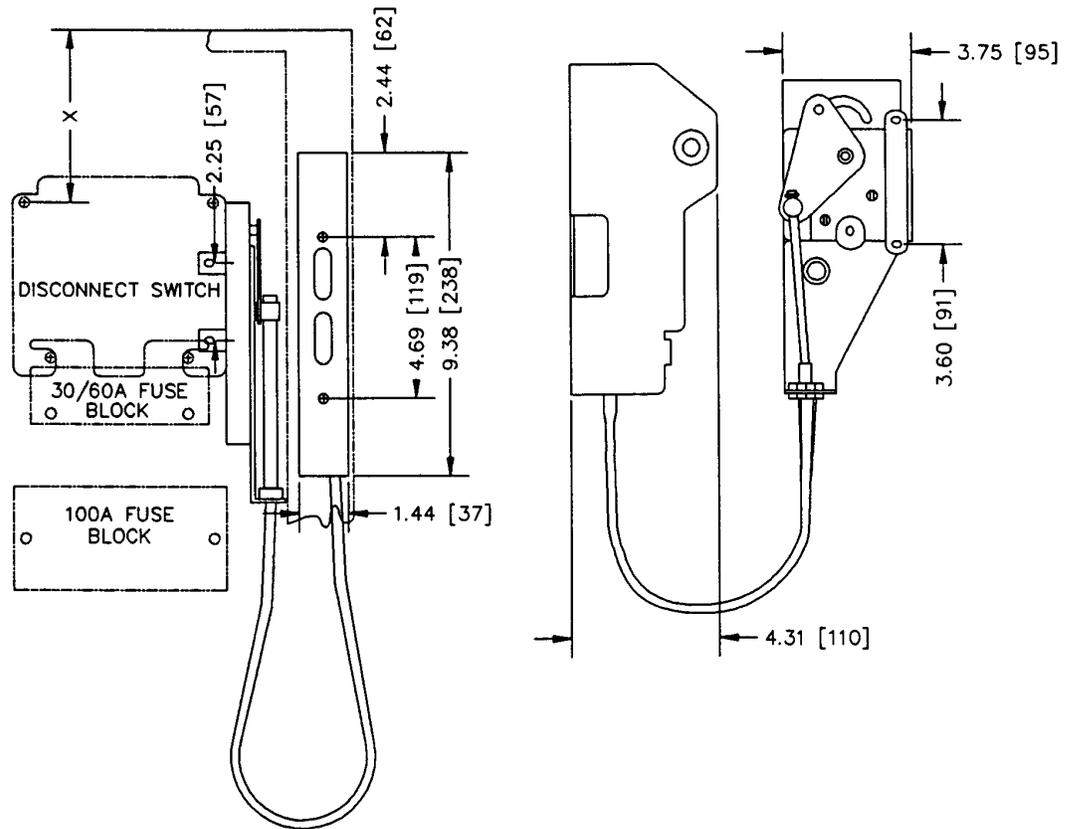
Switch Type	Maximum Voltage	Fuse Type Class	Dimension A	Dimension B
30A	30A, 250V	H, K, R	1.625	
	30A, 600V	H, K, R	4.25	
	30A, 600V	J	1.625	
60A	60A, 250V	H, K, R	2.25	
	60A, 600V	H, K, R	4.75	
	60A, 600V	J	1.625	
100A	100A, 250V	H, K, R		3.25
	100A, 600V	H, K, R		5.25
	100A, 600V	J		3.25

Lug Data

Disconnect Switch Size	Wire Size Minimum — Maximum
30A	#14-#2 Cu, #10-#2 Al
60A	#14-#2 Cu, #10-#2 Al
100A	#10-#0 Cu, #6-#0 Al
200A	#6-300 Kcmil Cu or Al
400A	#4-500 Kcmil Cu



Dimensions for Class 9422 Cable Operators



Type	Cable Length	Maximum Box Depth	Maximum Distance from Top Right Mounting Hole to Upper Mounting Hole for Handle Operator	
			Minimum C Dimension	Maximum C Dimension
CFT30	36"	24"	1"	4"
CFT50	60"	36"	16"	24"
CFT10	120"	36"	48"	60"

Dimension X is the wire bending space. It is 2.5" for 30A and 60A devices (#2 wire) and 5.12" for 100A devices (#0 wire). Refer to NEC 430-10.



Class 9422 Devices

Class 9422 Flange-Mounted, Variable-Depth Disconnect Switches

Ordering Information

The 9422 Type T disconnect switches are designed for variable depth, flange mounting applications. These switches are fully compatible with 9422 handle operators and 9423 door closing mechanisms. They feature: 200 and 400 amps; fusible (Classes H, K, J, or R fuses) and nonfusible; right or left flange mounting (except 400A, which mounts only right), UL recognized, and CSA certified. See page 28 for modifications and special features.

Disconnect Switches

Disconnect Switch Size	Variable Depth Mounting Range Min.-Max. (inches)	Maximum Horsepower Ratings*					DC Using 2 Poles 250V Max.	Fuse Clip Rating (Amperes) Non-Interchangeable Type For Class H, J, K or R Fuses Only		Switch and Operating Mechanism Only — Does Not Include Handle Mechanism	Switch & Operating Mechanism and Handle Mechanism (Overpacked)	
		AC Systems Volts (Motor Volts)				250V		600V	Type		Includes Type A1 Handle Mechanism	Includes Type A2 Handle Mechanism
		208 (200)	240 (230)	480 (460)	600 (575)							
200 Ampere	9.12-19.25▲	40	60	125	150	40	Non-Fusible		TF1	ATF11	ATF21	
							200	200	TF2	ATF12	ATF22	
							400	TF3†	ATF13†	ATF23†	
400A Fixed Depth■	11.38 (A5 or A6 Handle)	75	125	250	350	50	Non-Fusible		TG1●‡	For handle selection, see table below.		
400A Adj. Depth■	15.87-19▼ (A7 or A8 Handle)						400	400	TG2●‡			

- * Refers to rating of switch only.
- ▲ 9422 R will extend maximum mounting depth 7".
- † Accommodates Class J fuses only.
- Switches are either fixed-depth or adjustable; the handle will determine installation.
- ▼ In steps of 0.63 inches.
- Commercially available enclosures may not accept type TG operating mechanisms. Contact enclosure manufacturer for availability of enclosures for use with these switches.
- ‡ Right hand flange mounting only.

Class R Fuses

Fusible disconnect switches on this page will accept Class R fuses as standard. A field installable rejection kit is available which, when installed, rejects all but Class R fuses. With the rejection kit and Class R fuses installed, the switch is UL component recognized for use on systems with up to 200,000 RMS symmetrical Amperes fault current available.

Switch Ampere Rating	Type	Fuse Clip Rating		Class	Type
		250Vac	600Vac		
200	TF	200A	200A	9999	SR4
400	TG	400A	400A	9999	SR5

Electrical Interlocks

Optional accessory for use with disconnect switches listed on this page.

For Use On Switch Type	Class	Single Pole Interlock Type	Class	Two Pole Interlock Type
TF, ATF	9999	R8	9999	R9
TG	9999	R35	9999	R36



File E52639
CCN: WHTY2



File LR44199
Class 4652 04





Type A1



File E52639
CCN: WHTY2

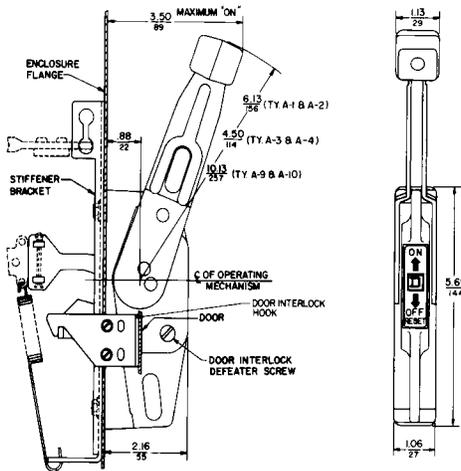
Class 9422 Handle Mechanisms

Handle mechanism kits are used with all disconnect switch and circuit breaker installations. The kits contain all parts necessary for mounting the handle to the flange of the enclosure. The Types A1 through A4 and A9 through A10 are suitable for right or left hand flange mounting. Two mounting methods are offered. The Types A5 through A8 handles are designed for right hand mounting only

Description	Type
6" HANDLE for use with 30-200 ampere switches and all circuit breaker mechanisms For use on NEMA 1, 3, 3R, 4 (sheet steel), and 12 enclosures For use on NEMA 4 (stainless steel) enclosures <i>All external metal parts are either stainless steel or a chrome-plated non-ferrous die casting.</i>	A1 A2
4" HANDLE for use with 30-200 ampere switches and all circuit breaker mechanisms Similar to Type A1 Similar to Type A2	A3 A4
12" HANDLE for use with 400 Type TG1 and TG2 disconnect switches ONLY For fixed-depth installation in NEMA 1, 3, 3R, 4 (sheet steel), and 12 enclosures For fixed-depth installation in NEMA 4 (stainless steel) enclosures <i>All external metal parts are either stainless steel or a chrome-plated non-ferrous die casting.</i> Similar to A5 except for adjustable-depth installation Similar to A6 except for adjustable-depth installation	A5 A6 A7 A8
10" HANDLE for use with Type D2 remote or dual adaptor kit ONLY Similar to Type A1 Similar to Type A2	A9 A10

Class 9422 Mounting and Outline Dimensions for A1, A2, A3, A4, A9, and A10 Handles

All dimensions are shown for right-hand flange mounting. For left-hand flange mounting, transpose all horizontal dimensions. See page 23 for information on A5 through A8 handles.



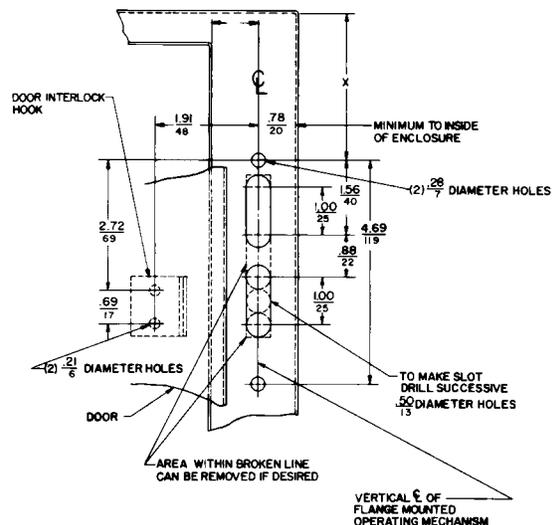
Handle Dimensions

Dimension X

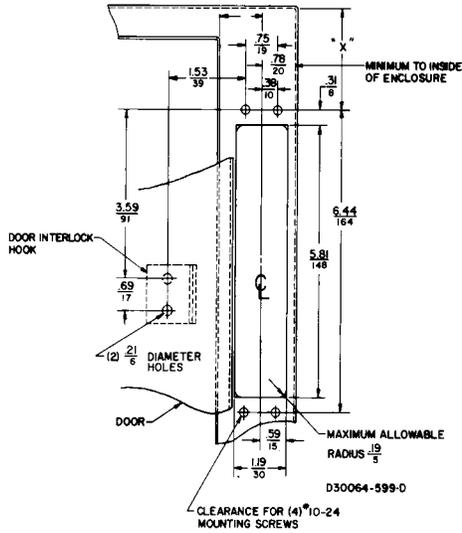
Dimension X is the distance from the top inside of the enclosure or other grounded metal parts (such as conduit hubs) to the upper mounting hole of the handle mechanism (See Panel Drilling diagram). Actual distances are dependent on the disconnect device being used, and should only be determined once the disconnect device is decided upon and the location on the panel determined.

Preferred Mounting Method

This method is for 16 Ga. to 0.25" thick enclosures. It consists of mounting the handle to the outside and the stiffener bracket to the inside of the enclosure and securing with two bolts, as shown in the figure below.



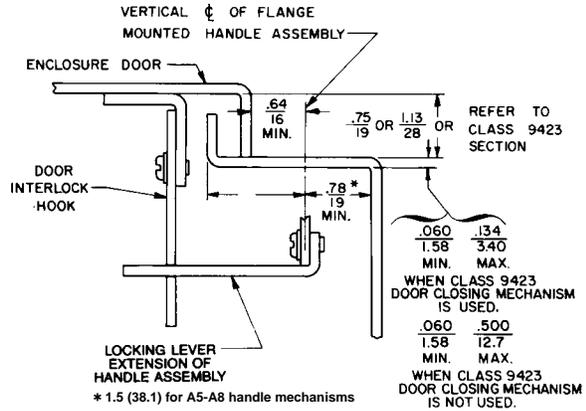
Class 9422 Devices



Panel Drilling for Alternate Mounting Method

Alternate Mounting Method

This method is for 16 Ga. to 0.25" thick enclosures. It consists of mounting the handle to the stiffener bracket with two bolts, and securing the assembly to the back side of the enclosure flange with four #10-24 screws. A separate mounting kit (Class 9422 AM-2) is required.

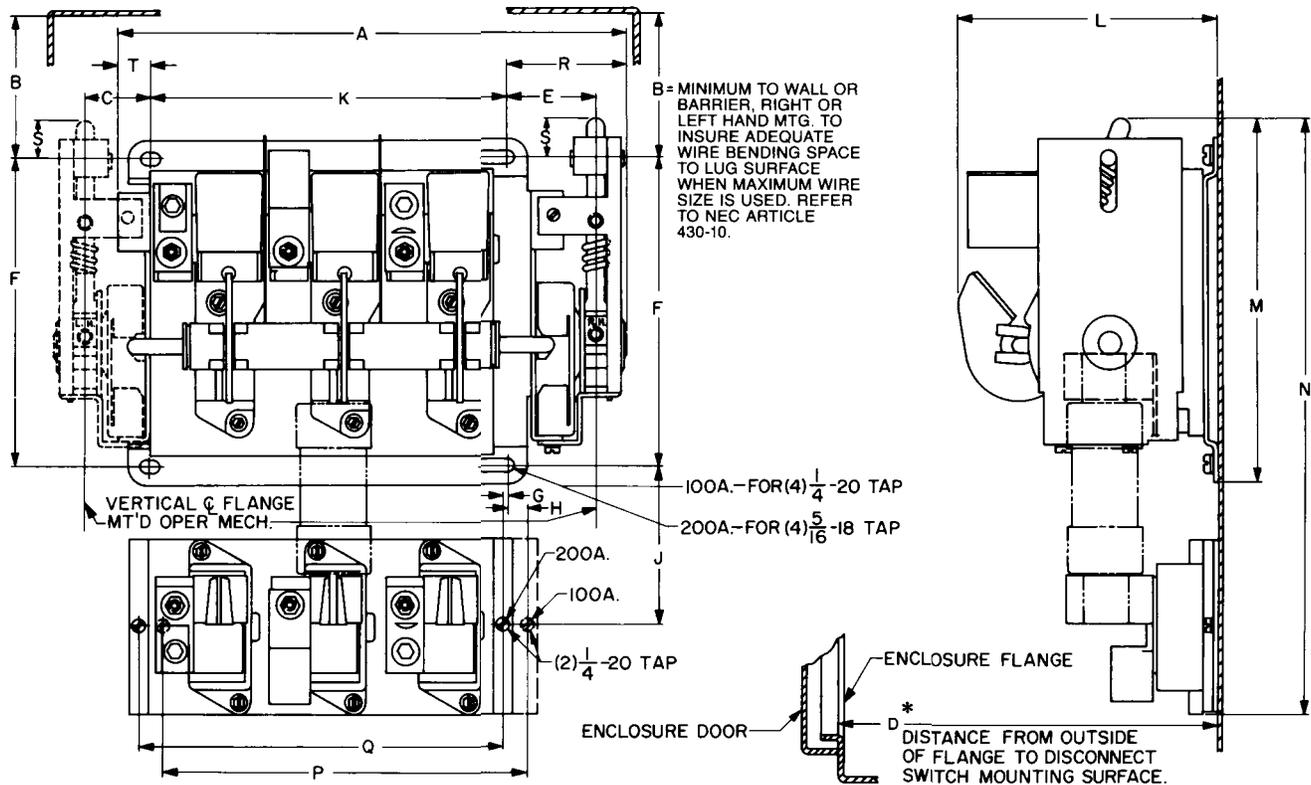


Flange Details

When Used With Class 9423 Door Closing Mechanism	A
Type M4, M4L, M9, M9L, M10, M10L, M24, M24L	1.00
Type M6	1.13
Type M8	1.50
Without Class 9423 Door-Closing Mechanism	1.16 Min.

**Class 9422 Flange-Mounted, Variable-Depth Disconnect Switches
200A Type TF**

Outline dimensions and general location information for 200A disconnect switches. Non-fusible and non-interchangeable fuse-clip type fusible switches.



Dimension Table

Type	Switch Size		A	B	C	D*		E	F	G	J	K	L	M	N	Q	R	S	T
	Amp Rating					Min	Max												
	Sw	Fuse Clips																	
TF1	200	None	13.33 (339)	9.38 (238)	1.64 (42)	9.12 (232)	19.25 (489)	2.33 (59)	8.00 (203)	—	—	9.44 (240)	6.50 (165)	9.53 (242)	—	—	3.14 (80)	1.03 (26)	.75 (19)
TF2	200	Class J 200A 600V	13.33 (339)	9.38 (238)	1.64 (42)	9.12 (232)	19.25 (489)	2.33 (59)	8.00 (203)	.09 (3)	2.77 (70)	9.44 (240)	6.50 (165)	—	14.11 (358)	9.63 (245)	3.14 (80)	1.03 (26)	.75 (19)
TF2	200	Class H, K, R 200A 250V	13.33 (339)	9.38 (238)	1.64 (42)	9.12 (232)	19.25 (489)	2.33 (59)	8.00 (203)	.09 (3)	4.14 (105)	9.44 (240)	6.50 (165)	—	15.48 (393)	9.63 (245)	3.14 (80)	1.03 (26)	.75 (19)
TF2	200	Class H, K, R 200A 600V	13.33 (339)	9.38 (238)	1.64 (42)	9.12 (232)	19.25 (489)	2.33 (59)	8.00 (203)	.09 (3)	6.64 (169)	9.44 (240)	6.50 (165)	—	17.98 (457)	9.63 (245)	3.14 (80)	1.03 (26)	.75 (19)

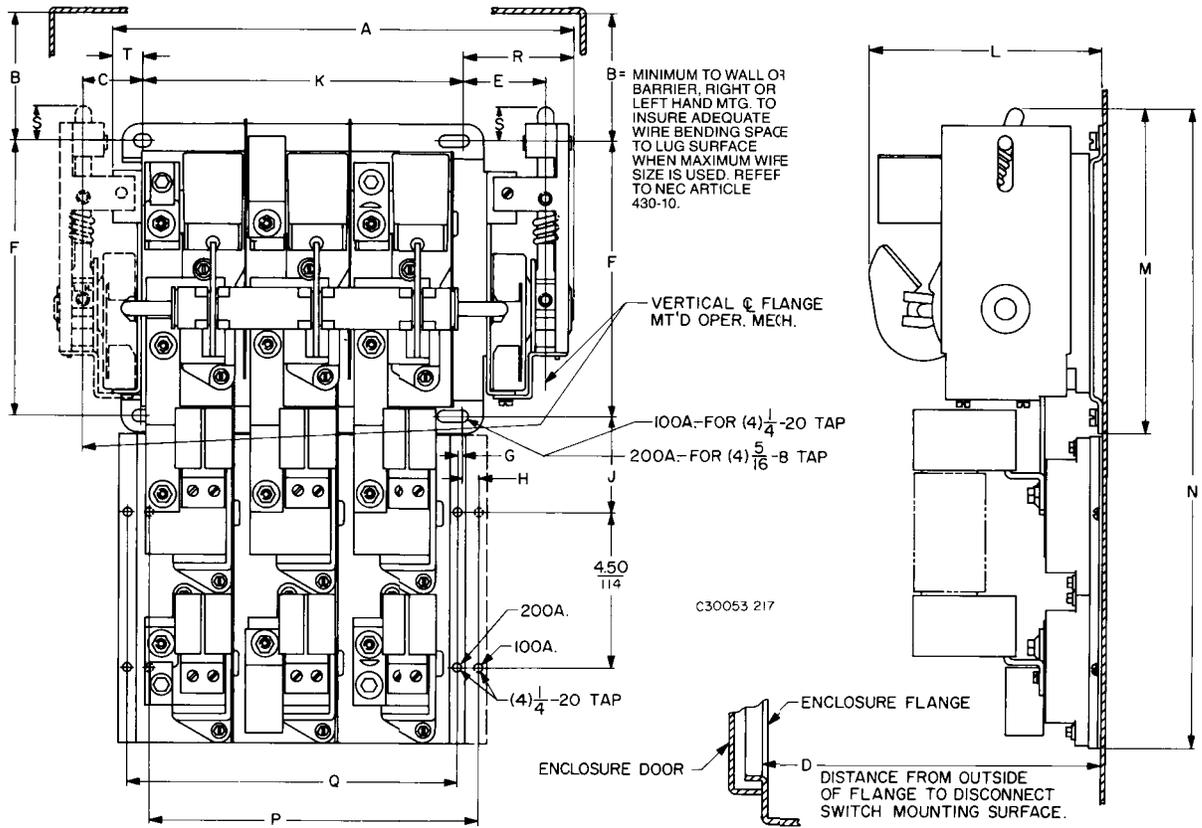
* The D dimension may be extended up to 7" with 9422 R2 (two required per switch).



Class 9422 Devices

Class 9422 Flange-Mounted, Variable-Depth Disconnect Switches 200A Type TF with Class J Oversized Fuse Clips

Outline dimensions and general location information for 200A disconnect switches. Non-fusible and non-interchangeable fuse-clip type fusible switches.



Dimension Table

Type	Switch Size		A	B	C	D*		E	F	G	J	K	L	M	N	Q	R	S	T
	Amp Rating					Min	Max												
	Sw	Fuse Clips																	
TF3	200	Class J 400A 600V	13.33 (339)	9.38 (238)	1.64 (42)	9.12 (232)	19.25 (489)	2.33 (59)	8.00 (203)	.09 (3)	2.77 (70)	9.44 (240)	6.50 (165)	9.53 (242)	18.53 (471)	9.63 (245)	3.14 (80)	1.0 3 (26)	.75 (19)

* The D dimension may be extended up to 7" with 9422 R2 (two required per switch).

**Class 9422 Flange-Mounted, Variable-Depth Disconnect Switches
400A Type TG**

Outline dimensions and general location for 400A disconnect switches. Non-fusible and non-interchangeable fuse-clip type fusible switches.

Type A5 through A8 Handle Mechanisms

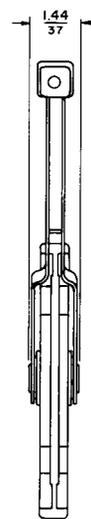
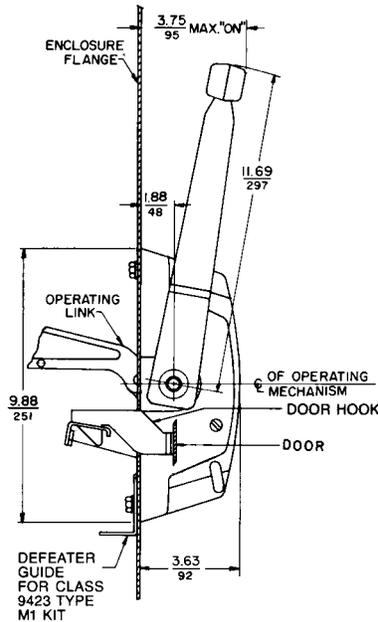
Switch Type	B	X
TG1,2	11.28 (286)	16.06 (408)

B and X = Minimum to wall or barrier to ensure adequate wire bending space to lug surface when maximum wire size is used. Refer to NEC Article 430.10. For fusible and non-fusible switches, dimension D is the distance from the outside of the flange to the disconnect switch mounting surface.

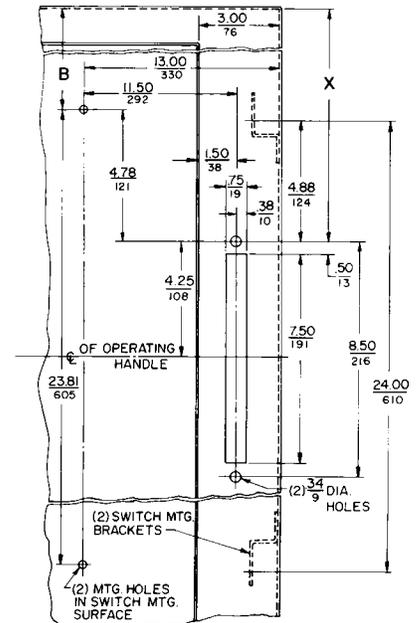
For Type TG1 or TG2 with:

- Type A5 or A6 fixed-depth handle, D = 11.38 (289).
- Type A7 or A8 adjustable-depth handle, D min. = 15.87 (403) and D max. = 19 (483), with steps of 0.63 (16).

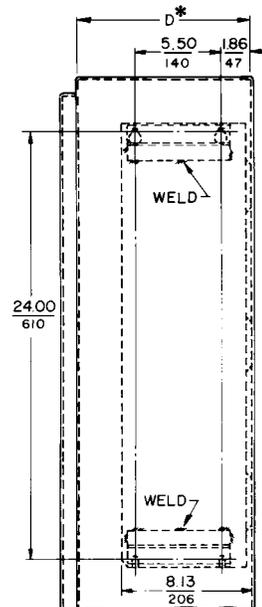
Note that copper lugs are standard on all Type TG disconnect switches.



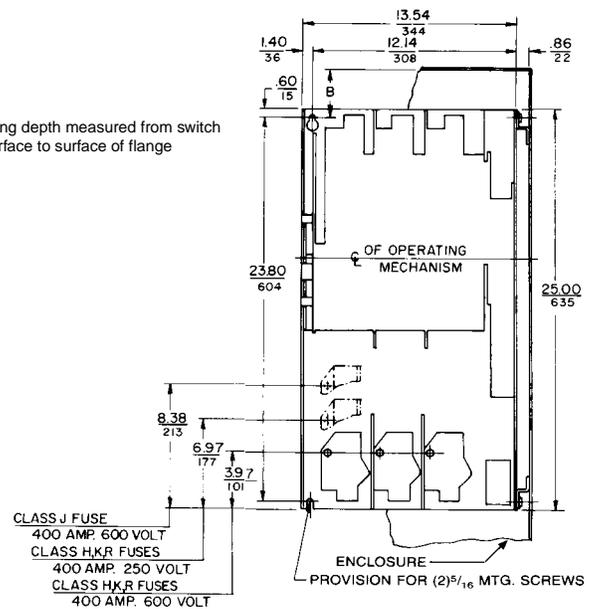
54-973 B



Non-Fusible and Fusible Switches



* D = Mounting depth measured from switch mounting surface to surface of flange



Class 9422 Devices



Class 9422 Bracket-Mounted Disconnect Devices

Class 9422 Type T disconnect switches listed in the table below are shipped with switch and external handle assembled to a bracket, ready for installation into the enclosure. A trim plate is provided with each kit to eliminate any mounting screws from being accessible from the front and also to provide an attractive installation. These switches can be used with Class 9423 door closing mechanisms.

Disconnect Switch Size	Maximum Horsepower Rating					Fuse Type	Fuse Clip Rating		Bracketed Mounted Switch Mechanism and Handle
	AC System Volts (Motor Voltage)				600V DC		250V (Amps)	600V (Amps)	
	208 (200)	240 (230)	480 (480)	600 (600)					Type
30A	7.5	7.5	15	20	5	None	—	—	BTCN30
						H, K, J, R	30	—	BTCF30
							60	30	BTCF33
							J▲	60	30
60A	15	15	30	50	10	None	—	—	BTDN60
						H, K, J, R	60	30	BTDF60
							—	60	BTDF63
							J▲	—	60
100A	25	30	60	75	20	None	—	—	BTEN10
						H, K, J, R	100	100	BTEF10
							J▲	100	100
200A	40	60	125	150	40	None	—	—	TFB1
						J	200	200	TFB2
							—	400	TFB3

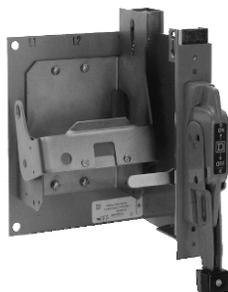
 File E52369
CCN: WHTY2

 File LR44199
Class 4652 04

▲ Space saving design – Type J fuses mounted on the non-fused bracket.
For Lug Data, see page 16; for Electrical Interlocks, see page 26.
NOTE: Some enclosures may not accept the listed operating mechanisms; contact the enclosure manufacturer.

Class 9422 Bracket-Mounted Operating Mechanisms for Use With Square D Circuit Breakers

Circuit breaker operating mechanisms listed below are shipped with the external operating handle assembled to a bracket. Circuit breakers are not included and must be ordered separately. A trim plate is provided with each kit to eliminate any mounting screws from being accessible from the front and also to provide an attractive installation. The operating handle is Type A1. These switches can be used with Class 9423 door closing mechanisms. For Class 9999 electrical interlock kits, see page 26.



Use With			Operating Mechanism	
Breaker or Interrupter Type	No. of Poles	Frame Size (Amps)	Right Hand Flange Mounting	
			Type	
GJL	3	100	BG1	
FAL, FHL	2-3	100	BN1	
KAL, KHL	2-3	250	BP1	
LAL, LHL, Q4L	2-3	400	BR1	

NOTE: Some enclosures may not accept the listed operating mechanisms; contact the enclosure manufacturer.

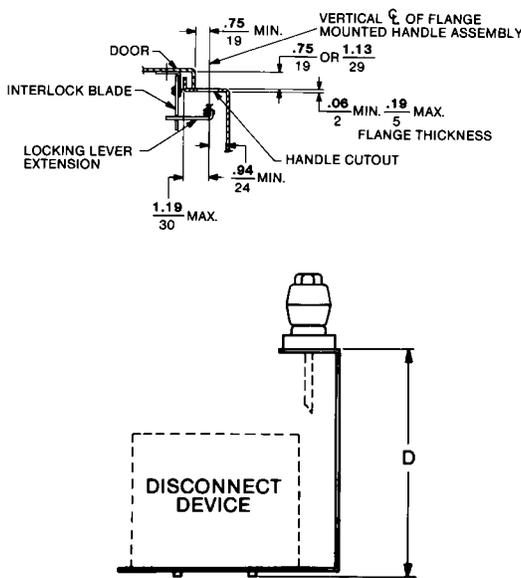
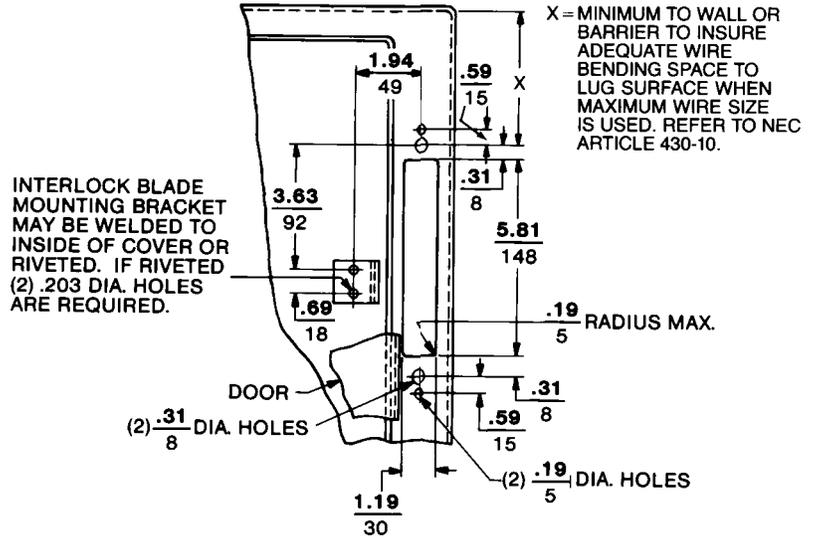
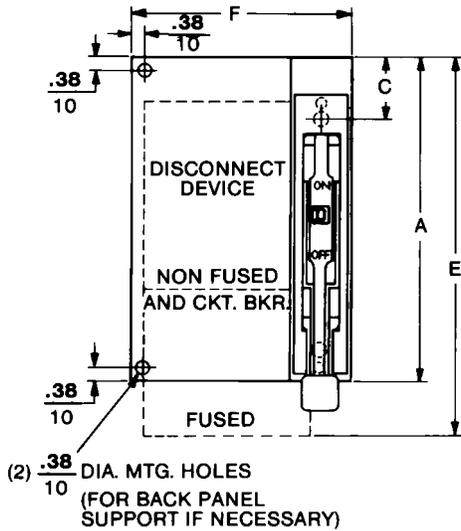
Class 9422 Flexible Cable Mechanisms for Use With Square D Circuit Breakers

For use with Square D circuit breakers and Class 9422A handle operators. Especially designed for tall, deep enclosures where placement flexibility is required.



Circuit Breaker Type	Number of Poles	Frame Size Amps	Cable Mechanism			Cable Mechanisms with A1 Handle For Types 1, 3, 3R, 12
			Total Length	Flexible Length	Type	Type
GJL	3	100	36"	22"	CGJ30	CGJ31
			48"	34"	CGJ40	CGJ41
			60"	46"	CGJ50	CGJ51
			120"	106"	CGJ10	CGJ11
FAL, FHL	3	100	36"	22"	CFA30	CFA31
			60"	46"	CFA50	CFA51
			120"	106"	CFA10	CFA11
KAL, KHL	3	250	36"	22"	CKA30	CKA31
			60"	46"	CKA50	CKA51
			120"	106"	CKA10	CKA11
LAL, LHL	3	400	36"	22"	CLA30	CLA31
			60"	46"	CLA50	CLA51
			120"	106"	CLA10	CLA11

Outline Dimensions and General Location Information for Class 9422 Bracket-Mounted Devices



Note: Back panel support is recommended for Types TFB1, 2, and 3. Other devices may also require support if flange is not sufficiently rigid.

Type	A	X	C	D	Min. Enclosure Depth*	Fusible Device E	F
BTCN BTDN BTEN	9.50 (241)	5.50 (140)	1.88 (48)	6.56 (167)	8.0 (203)	—	6.38 (162)
BTCF BTDF BTFF	9.50 (241)	5.50 (140)	1.88 (48)	8.56 (218)	10.0 (254)	11.88 (302)	6.38 (162)
TFB1	11.5 (292)	11.75 (298)	3.88 (98)	9.50 (241)	12.0 (305)	—	13.19 (335)
TFB2 TFB3	20.0 (508)	11.75 (298)	3.88 (98)	9.50 (241)	12.0 (305)	20.0▲ (508)	13.19 (335)
BN1	8.75 (222)		1.13 (29)	6.50 (165)	8.0 (203)	—	7.13 (181)
BP1	9.13 (232)		1.13 (29)	6.50 (165)	8.0 (203)	—	7.38 (187)
BR1	11.25 (286)		2.75 (70)	8.50 (216)	10.0 (254)	—	10.13 (257)

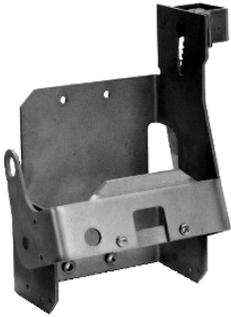
* The min. depth is greater than Dimension D since additional space is needed when mounting the mechanism.
▲ Fuses and fuse base assembly do not extend beyond bracket.

Minimum Wire Bend Space for X Dimension

Type	Circuit Breaker Type	Amp Rating	Standard Al/Cu Lugs Wire Range	X Min.	Optional Al/Cu Lugs Wire Range	X Min.	Optional Cu Lugs Wire Range	X Min.
BN1	FAL, FCL, FHL	15-30	1 - #14-4 Cu or 1 - #12-4 Al	2.00 (51)	1 - #14-1/0 Cu or 1 - #12-1/0 Al	5.00 (127)	1 - #14-1 Cu	3.00 (76)
BN1	FAL, FCL, FHL	35-100	1 - #14-1/0 Cu or 1 - #12-1/0 Al	5.00 (127)	1 - #14-1 Cu or 1 - #12-4 Al	2.00 (51)	1 - #14-1 Cu	3.00 (76)
BP1	KAL, KHL	70-2500	1 - #4 - 350 Kcmil	11.28 (287)	—	—	1 - #6 - 250 Kcmil	7.28 (185)
BR1	LAL, LHL, Q4L	125-400	1 - #1 - 600 Kcmil or 1 - #1 - 250 Kcmil	14.00 (356)	1 - 500 - 750 Kcmil	20.37 (517)	1 - #1 - 600 Kcmil Cu or 2 - #1 - 250 Kcmil Cu	14.00 (356)



Class 9422 Devices



Variable-Depth Mechanisms for Use With Square D Circuit Breakers

Designed for installation in custom built control enclosures where main or branch circuit protective devices are required. All circuit breaker operating mechanisms are suitable for either right- or left-hand flange mounting, convertible on the job.

Use With				Operating Mechanism		
Circuit Breaker Frame Size	No. of Poles	Frame Size (Amps)	Variable Depth Mtg. Range Min.-Max.† (Inches)	Operating Mechanism Only — Does Not Include Handle Mechanism	Operating Mechanism and Handle Mechanism	
				Type	Includes Type A1 Handle Mechanism	Includes Type A2 Handle Mechanism
GJL	3	75, 100	6.00-17.75	RG1	ARG11	ARG21
FAL, FHL	2-3	100	5.38-17.75	RN1	ARN11	ARN21
KAL, KHL	2-3	250	6.38-17.88	RP1	ARP11	ARP21
LAL, LHL, Q4L	2-3	400	7.44-18.25	RR1	ARR11	ARR21
MEL, MXL	2-3	800	9.00-18.38	RT1	ART11	ART21
MAL, MHL	2-3	1000	9.00-18.38	RT1	ART11	ART21
NAL, NCL, NEL, NXL	2-3	1200	11.00-18.37	RX1	—	—

† Class 9422 Type R2 will extend mounting depth 7 inches.

Electrical Interlocks – Class 9999

Description	Class	Type
Single Pole, Double Throw	9999	R26▼
Double Pole, Double Throw	9999	R27▼

▼ Not for use with the GJL operating mechanism.

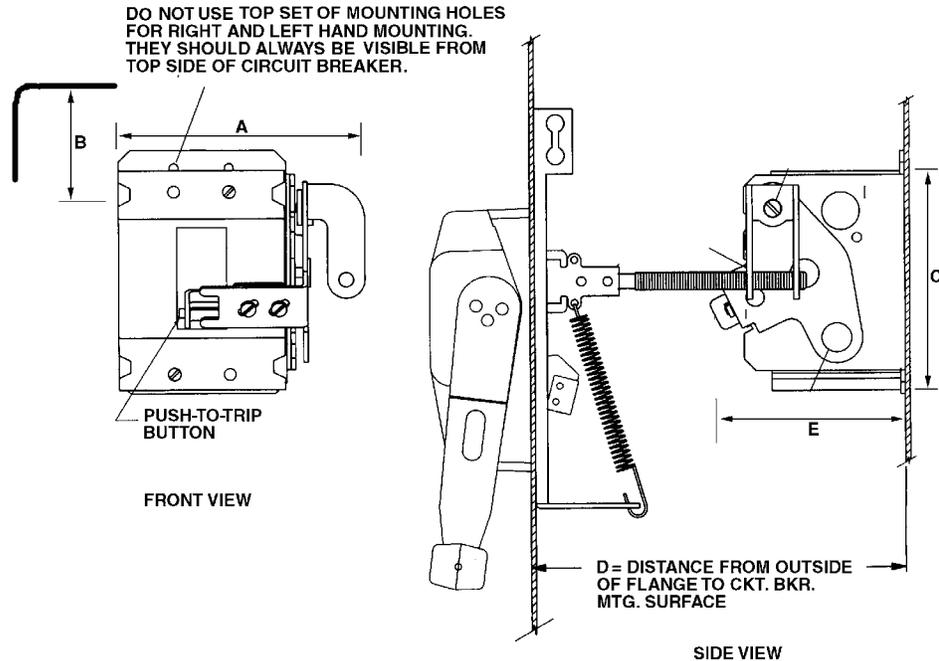


File E62922
CCN: DIHS2



File LR44199
Class 3211 07

Outline Dimensions and General Location Information for 9422 RG-1 GJL Circuit Breakers 15A to 100A



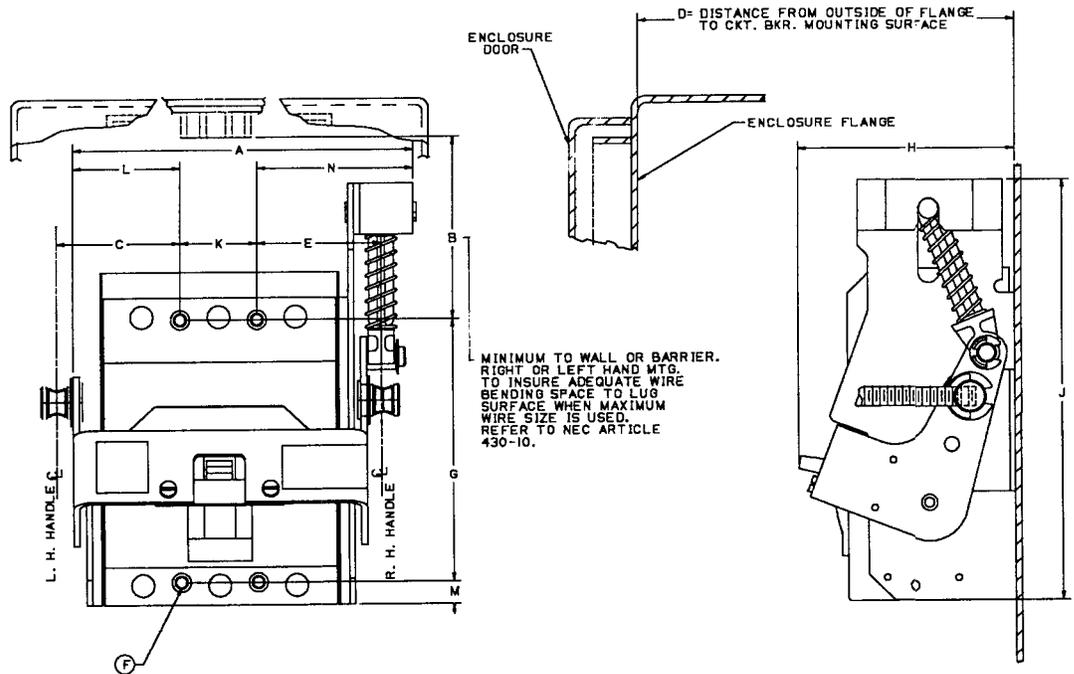
Dimensions – inches (millimeters)

Circuit Breaker Frame Size	Type	Width A	Minimum to Wall or Barrier B	Height C	Distance to Enclosure Flange (min-max) D*	Bracket Depth E
GJL	RG1	5.00 (127)	6.00 (152)	4.75 (121)	6.00 (152) – 17.75 (451)	4.00 (102)

To ensure adequate wire-bending space to lug surface when maximum wire size is used, refer to NEC Article 430-10.

* 9422 R2 will extend dimension 7 inches (two required).

Outline Dimensions and General Location Information for FAL, FHL, KAL, and KHL Circuit Breakers (100A and 200A Frames)



Dimensions – inches (millimeters)

Circuit Breaker Frame Size	Type	A	B	C	D* min	D* max	E	F▲	G	H	J	K	L	M	N
FAL, FHL	RN1	6.75 (171)	5.38 (137)	2.44 (62)	5.51 (140)	17.75 (451)	2.44 (62)	#8-32(4)	5.13 (130)	4.26 (108)	8.50 (216)	1.50 (38)	2.19 (56)	0.44 (11)	3.06 (78)
KAL, KHL	RP1	7.13 (181)	11.69 (297)	2.63 (67)	6.51 (165)	17.88 (454)	2.63 (67)	#10-24(4)	7.13 (181)	4.94 (125)	10.13 (257)	1.50 (38)	2.38 (60)	0.44 (11)	3.25 (83)

To ensure adequate wire-bending space to lug surface when maximum wire size is used, refer to NEC Article 430-10.

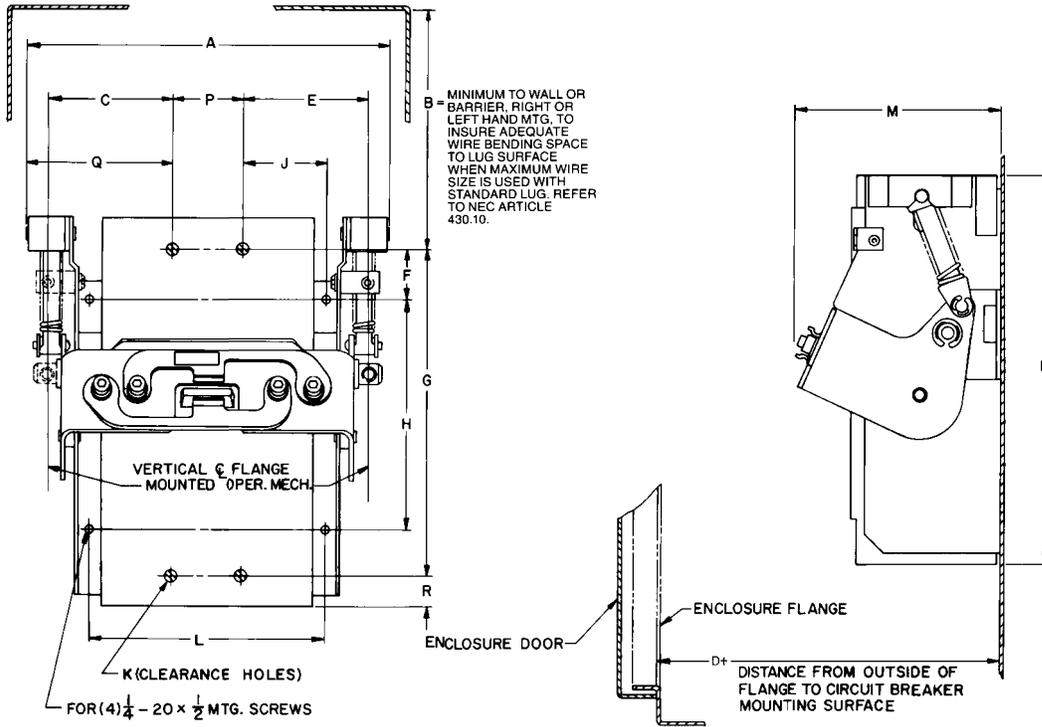
* 9422 R2 will extend dimension 7 inches (two required).

▲ Dimension for panel drilling.



Class 9422 Devices

Outline Dimensions and General Location Information for LAL, LHL, and Q4L Circuit Breakers (400A Frames)



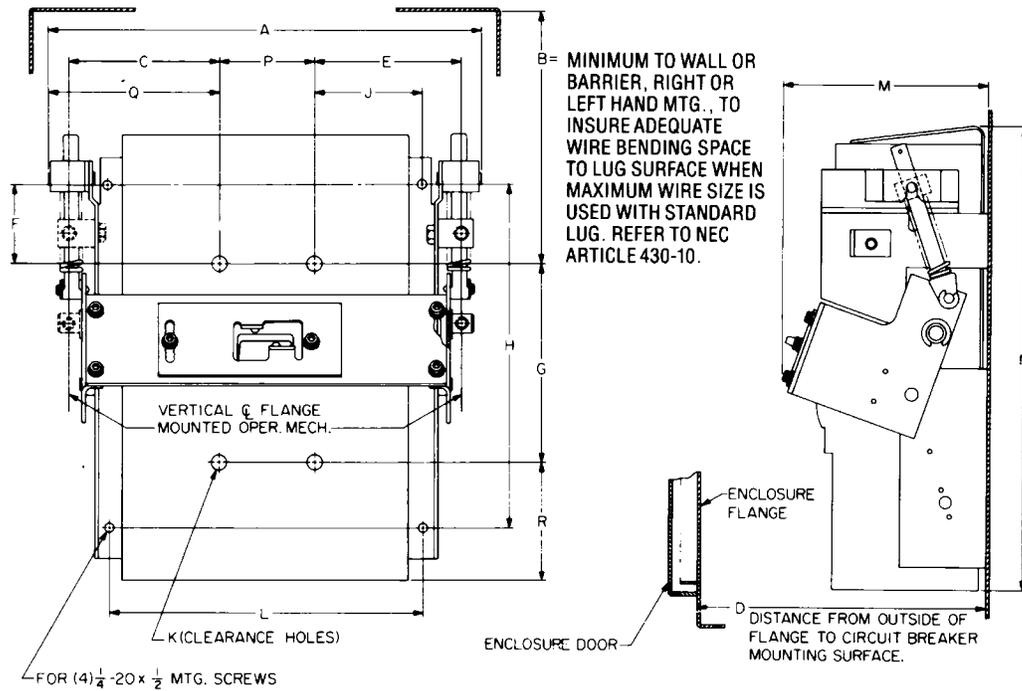
Dimensions – inches (millimeters)

Circuit Breaker Frame Size	Type	A	C	D* min	D* max	E	F	G	H	J	K	L	M	N	P	Q	R
LAL, LHL, Q4L	RR1	10.19 (259)	3.56 (90)	7.44 (189)	18.25 (464)	3.56 (90)	1.38 (35)	9.25 (235)	6.56 (167)	2.31 (59)	0.38 (10) Dia. (4)	6.63 (168)	6.00 (152)	11.00 (279)	2.00 (51)	4.13 (105)	0.88 (22)

To ensure adequate wire-bending space to lug surface when maximum wire size is used, refer to NEC Article 430-10.

* 9422 R2 will extend dimension 7 inches (two required).

**Outline Dimensions and General Location Information for
MEL, MAL, MHL, and MXL Circuit Breakers (800A and 1000A Frames)
and NAL, NCL, NEL, and NXL Circuit Breakers (1200A Frames)**



Dimensions – inches (millimeters)

Circuit Breaker Frame Size	Type	A	B	C	D* min	D* max	E	F	G	H	J	K	L	M	N	P	Q	R
MEL, MXL	RT1	13.38 (340)	16.38 (416)	4.63 (118)	9.00 (229)	18.38 (467)	4.63 (118)	0	11.44 (291)	10.69 (272)	3.44 (85)	0.5 (13) Dia. (4)	9.69 (246)	6.63 (168)	14.00 (356)	3.00 (76)	5.19 (132)	1.69 (43)
MAL, MHL▲	RT1	13.38 (340)	16.38 (416)	4.63 (118)	9.00 (229)	18.38 (467)	4.63 (118)	0	10.69 (272)	10.69 (272)	3.44 (85)	0.5 (13) Dia. (4)	9.69 (246)	6.63 (168)	14.00 (356)	3.00 (76)	5.19 (132)	1.69 (43)
NAL, NCL NEL, NXL	RX1	19.63 (499)	25.50 (648)	13.50 (343)	11.00 (279)	18.37 (467)	6.75 (171)	0	8.75 (222)	8.75 (222)	5.34 (136)	0.50 (13) Dia. 4	15.75 (400)	9.00 (229)	13.75 (349)	4.94 (125)	7.38 (187)	1.75 (44)

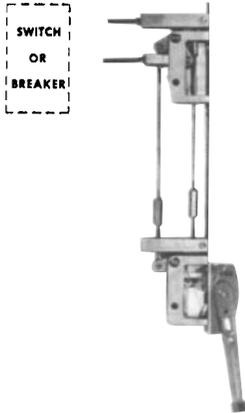
To ensure adequate wire-bending space to lug surface when maximum wire size is used, refer to NEC Article 430-10.

* 9422 R2 will extend dimension 7" (178mm) (two required).

▲ Minimum mounting depth when using MAL or MHL circuit breakers can be decreased to 6.63" (168mm) by using Class 9422 Type RT1B conversion kit.



Class 9422 Devices



Remote operation shown (handle mechanism not included in kit)

Accessories for Class 9422 Flange-Mounted, Variable-Depth Disconnect Switches

Remote or Dual Adaptor Kit

For the remote or dual operation of 30, 60, 100 and 200 ampere disconnect switches, or GJL, FAL, FHL, KAL, KHL, LAL, LHL, Q4L, MAL, MHL, MEL, and MXL circuit breakers.

Remote Operation — permits mounting the Class 9422 Type A9 or A10 handle mechanism at a lower level than the disconnect device it controls. This arrangement is often required where the disconnect device is mounted too high for personnel to easily reach a conventional operator.

Dual Operation — permits controlling two disconnect devices, one in line with and one remote from a single Class 9422 Type A9 or A10 handle mechanism.

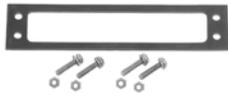
Note: Class 9422 Type A9 or A10 handle and preferred mounting method **must** be used.

Mounting Depths for Remote or Dual Adaptor Kits

Disconnect Device	Enclosure Mounting Depth		Type
	Minimum	Maximum	
Disconnect Switch			D2
30A Type TCN, TCF	11.37	19.25	
60A Type TDN, TDF	11.37	19.25	
100A Type TEN, TEF	11.37	19.25	
200A Type TF	13.13	20.81	
Circuit Breaker	Minimum	Maximum	
GJL	10.50	19.50	
FAL, FHL	10.66	19.50	
KAL, KHL	11.13	19.50	
LAL, LHL, Q4L	12.13	19.88	
MAL, MHL, MEL, MXL	13.75	20.25	

Note: Must mount switch or circuit breaker a minimum of 9" above or below.

Other Accessories



Alternate Mounting Kit



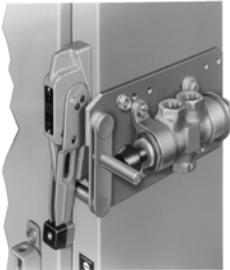
Channel/Flange Support Kit



Auxiliary Lock Plate

	Description	Class	Type
Alternate Mounting Kit	Permits mounting Class 9422 Type A1 or A2 handle mechanisms in enclosures with flange thickness of 16 gauge to 0.5 inch.	9422	AM2
Channel/Flange Support Kit	Auxiliary kit recommended for use with 30 and 60 Ampere disconnect switches and FAL, FCL, FHL, KAL, and KHL circuit breaker mechanisms when these devices are to be mounted on the center channel of a multi-door enclosure or when extra rigidity for the flange is required. Supplied as standard with 100 and 200 ampere disconnect switches and LAL, LHL, Q4L, MAL, MHL, MEL, and MXL circuit breaker mechanisms	9422	C1
Auxiliary Lock Plate	Auxiliary kit recommended for use with the Class 9422 Type A-1 flange handle to facilitate padlocking the handle in the OFF position. Primarily used when the handle is mounted on the center channel of a multi-door enclosure. Also in any case where the enclosure doors interfere with the normal padlock slot in the flange handle. Meets both the Automotive and NFPA 79 specifications.	9422	L1
Special Lugs for Disconnect Switches	Copper lugs only – specify Form Y157 Tin-plated aluminum lugs for 400A Type TG switch – specify Form Y1572 (000-750 Kcmil Cu/Al wire)	—	—
	Anderson Type VCEL compression lugs – specify Form Y1574. Exceptions: all 30A and 60A disconnect switches are not available with compression lugs	—	—
Operating Rods	Standard operating rod for use with Class 9422 variable depth mechanisms. Included as standard in each kit	9422	R1
	Extra long operating rod for use with Class 9422 variable depth mechanisms. Can be used as a substitute for the standard rod included in each kit to increase the maximum mounting depth 7". (Two are required for Types ARR, RR, ART, RT, ATE, TE, ATF, TF)	9422	R2





Air valve Interlock Mounted on Enclosure

Air Valve Interlocks

Air valve interlocks are designed to interlock specific three-way air valves with Class 9422 Type A1, 2, 5, 6, 7, 8, 9, or 10 handle mechanisms when mounted to the right-hand side of an enclosure. These devices mechanically interlock the air and electrical supplies of a machine so both can be disconnected or padlocked OFF simultaneously. The air valve interlock makes it possible to exhaust the air in machine lines when the handle mechanism is moved to the OFF position, making the machine both electrically and pneumatically inoperative.

Air valve interlocks will only accept specific three-way air valves manufactured by Shrader Bellows listed in the table below. Note that the valves must be purchased directly from Shrader Bellows, 200 W. Exchange St., Akron, OH 44309-0631.

Air Valve Interlocks

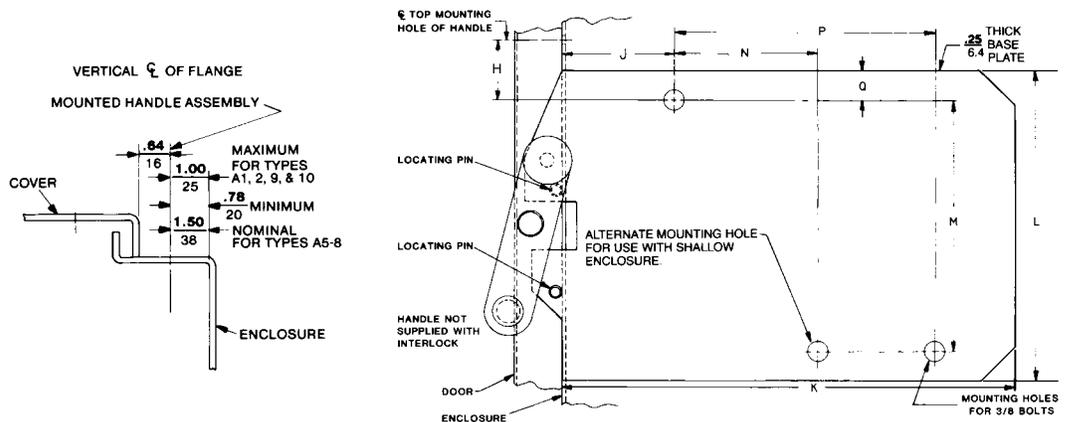
Shrader Bellows Valve Model Number			Class 9422 Air Valve Interlock
Air Valve Size	Knob Operated*	Lever Operated*	Type
.50 (13) NPT	M048-418-85	M085-418-90	G1
	M085-418-48		
0.75 (19) NPT	M048-618-85	M085-618-90	G2
	M085-618-48		
1.00 (25) NPT	M000-80004	M0885-818-90	G1
1.50 (38) NPT	M085-918-85	M090-918-85	G2

* Does not include air valves or handle mechanism. For more information on air valves listed above, contact Shrader Bellows, 200 W. Exchange St., Akron, OH 44309-0631.



Type G1 Air Valve Interlock

Air Valve Interlock Dimensions



Class 9422 Type	Used with Handle Mechanism	H	J	K	L	M	N	P	Q
G1	Type A1, A2	2.19 (56)	1.19 (30)	8.94 (227)	5.00 (127)	3.63 (92)	3.50 (89)	5.38 (137)	0.62 (16)
	Type A5, A6, A7, A8	6.25 (159)	1.19 (30)	8.94 (227)	5.00 (127)	3.63 (92)	3.50 (89)	5.38 (137)	0.62 (16)
	Type A9, A10	2.84 (72)	0.94 (24)	8.94 (227)	5.00 (127)	3.63 (92)	3.50 (89)	5.38 (137)	0.62 (16)
G2	Type A1, A2	1.38 (35)	2.38 (60)	9.44 (240)	6.75 (171)	5.25 (133)	3.00 (76)	5.44 (138)	0.75 (19)
	Type A5, A6, A7, A8	5.47 (139)	2.38 (60)	9.44 (240)	6.75 (171)	5.25 (133)	3.00 (76)	5.44 (138)	0.75 (19)
	Type A9, A10	2.03 (52)	2.13 (54)	9.44 (240)	6.75 (171)	5.25 (133)	3.00 (76)	5.44 (138)	0.75 (19)



File E52369
CCN: WHTY2



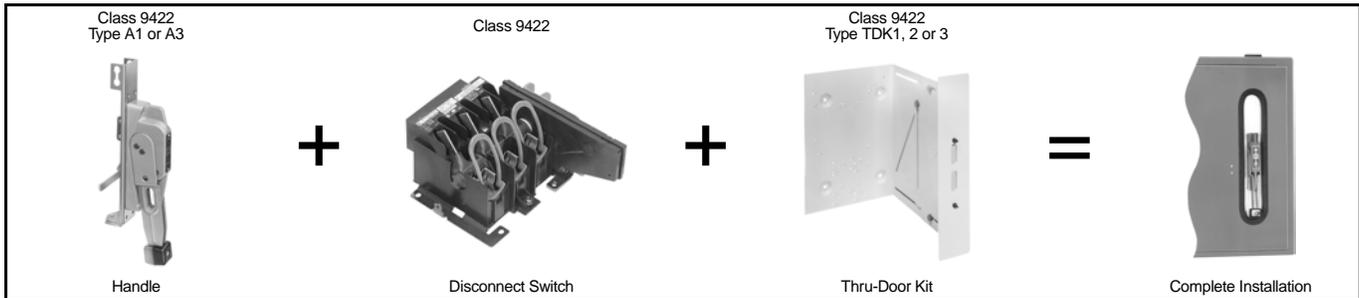
Class 9422 Devices

Class 9422 Thru-the-Door Operating Mechanism Kits

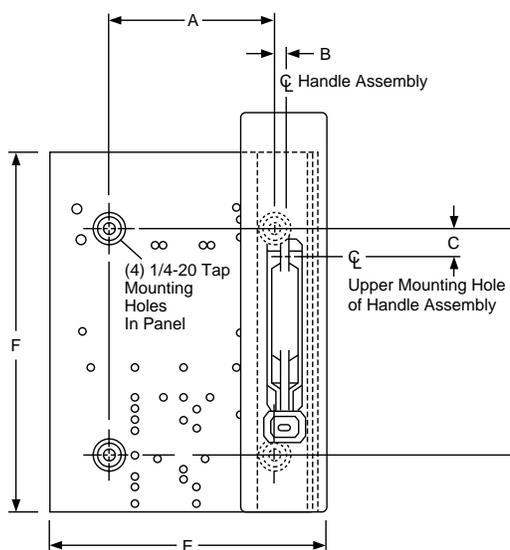
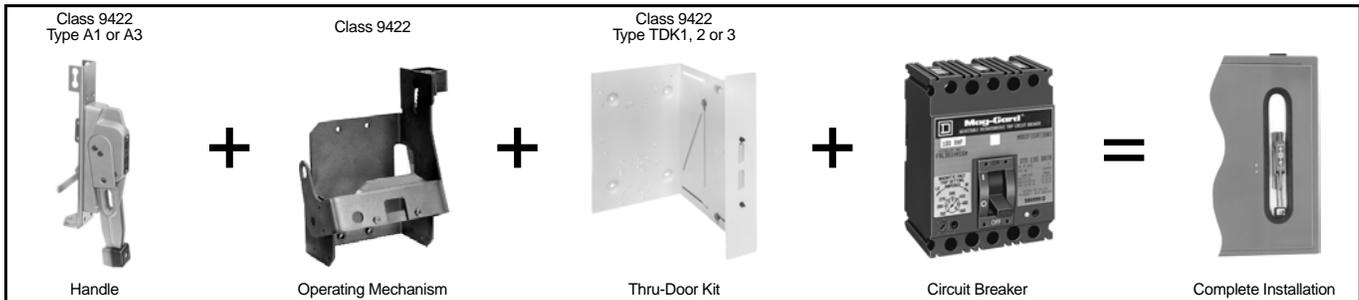
Type TDKs are variable depth, thru-the-door bracket mounting kits. Standard Class 9422 variable depth operating mechanisms can be used.

Thru-the-door kits allow variable-depth, flange-mounted operating mechanisms to be mounted in enclosures which have no flange. Kits include: a two-piece, variable-depth bracket; gasket plate to maintain NEMA Type 1, 3, 3R and 12 enclosure ratings; door drilling template with locator pins; and door cutout trim and mounting hardware.

Selection Guide For Disconnect Switch Applications



Selection Guide For Circuit Breaker Applications



Selection Guide

Variable Depth Bracket Kit	Class 9422 Disconnect Switch	Class 9422 Circuit Breaker Operator	Enclosure Depth▲			
			minimum		maximum	
			inches	mm	inches	mm
TDK1	TCF, TCN TDF, TDN TEN	RG1 RN1 RP1	8.00	203	12.00	305
TDK2	TEF TF1	RR1	10.00	254	16.00	406
TDK3	TF2, 3	RT1	10.00	254	16.00	406

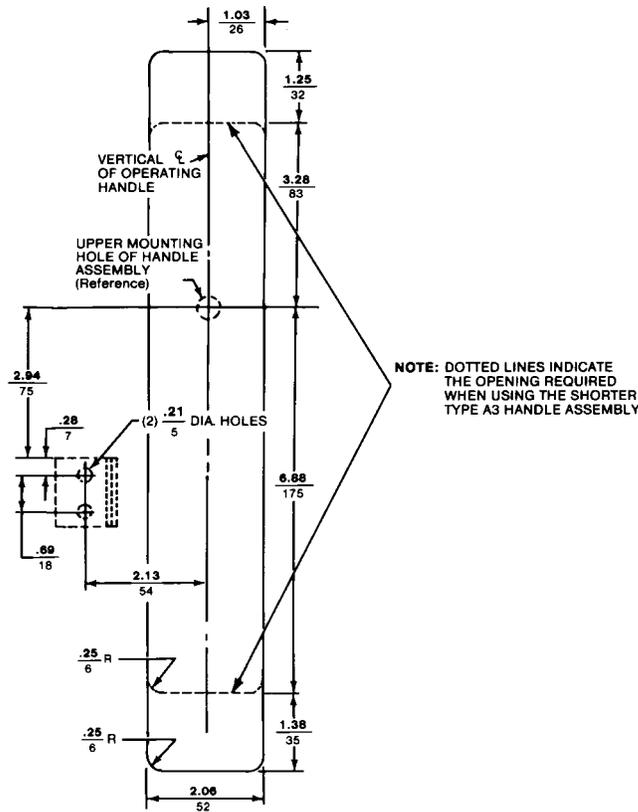
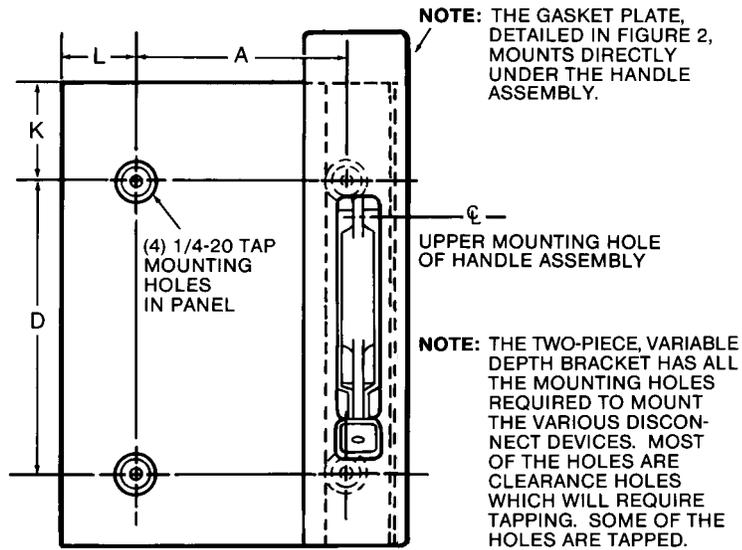
▲ Measured from inside surface of enclosure door to disconnect means mounting surface (control panel).

Dimensions

Kit Type	A		B		C		D		E		F	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
TDK1	5.37	136	0.32	8	0.94	24	7.50	191	8.59	218	11.88	302
TDK2	9.60	244	0.25	6	2.13	54	6.75	171	13.70	348	11.50	292
TDK3	10.25	220	0.60	15	2.00	51	14.87	378	13.70	348	18.70	475

Outline Dimensions and General Location Information for Thru-the-Door Types TDK1, 2, 3

Kit Type	Dimensions			
	A	D	K	L
TDK1	5.37 (136)	7.50 (191)	2.50 (64)	1.88 (48)
TDK2	9.60 (244)	6.75 (171)	2.25 (57)	2.50 (64)
TDK3	10.25 (220)	14.87 (378)	2.38 (60)	1.50 (38)



Enclosure Door Cutout and Door Interlock Hook Mounting Dimensions

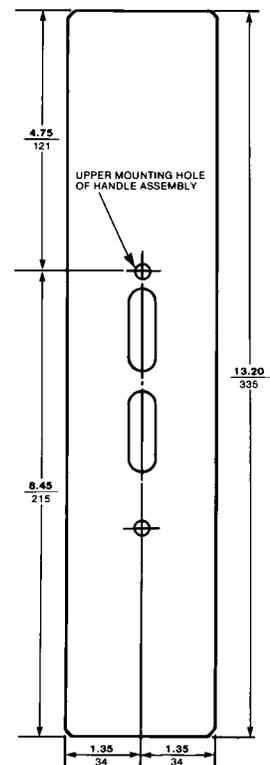


Figure 2: Gasket Plate



Class 9423 Door-Closing Mechanisms

Class 9423 Door-Closing Mechanisms

Class 9423 door-closing mechanisms may be used on enclosures with door openings up to 91 inches. The door closing mechanisms are designed to be used on control enclosures and interlocked with a Class 9422 disconnect device, although they all can be used independently. Three different systems are available and their use is as recommended below. A complete system is available for interlocking all the doors of a multi-door enclosure with the master door when using the 6" or 8" vault handle mechanism.

Note that the "Master Door" is defined to be the door of a single or multi-door enclosure which is interlocked directly with the disconnect device. The master door can be hinged on either the right or left hand side. It can be located in any position on a multi-door enclosure. The "Auxiliary Door" is defined to be the remaining door(s) of a multi-door enclosure which is (are) interlocked with the master door by means of the overhead interlocking system as illustrated on the next two pages.



NEMA-Style Flange Handle Disconnect Switch



Circuit Breaker Mechanism

Selection Procedure

- Step 1.** Determine enclosure construction (number of doors, door height, hinge location, etc.).
- Step 2.** Determine Class 9422 disconnect device to be used – either a disconnect switch or a circuit breaker mechanism (see examples of these devices to the left).
- Step 3.** Determine the location of disconnect device and handle mechanism (right- or left-hand flange or center channel).
- Step 4.** Select the door closing mechanism required:

Door Closing Mechanism		
60" Maximum Door Opening (Recommended)	46-60" Door Opening (Recommended)	61-91" Door Opening (Recommended)
 <ul style="list-style-type: none"> • 2 Point Locking is Standard • A Third Roller Latch Kit is Available for Three Point Locking • For 3/4" Door Depths 	 <ul style="list-style-type: none"> • Use on Single or Multi-Door Enclosures • Use with Doors Hinged on Right or Left Side • Referred to as the 6" Vault Handle Mechanism • For 3/4" Door Depths 	 <ul style="list-style-type: none"> • Use on Single or Multi-Door Enclosures • Use with Doors Hinged on Right or Left Side • Referred to as the 8" Vault Handle Mechanism • For 1-1/8" Door Depths

- Step 5.** Select auxiliary door closing mechanisms and multi-door interlocking hardware, if required. (A complete system for interlocking all auxiliary doors of a multi-door enclosure with center channel is available for the medium and large enclosures.)

Class 9423 Door-Closing Mechanisms

Class 9423 Single Door Enclosures: NEMA Type 4 or 12 with 60" High Maximum Opening

The door closing mechanisms listed in the table below are for use on small to medium size single door control enclosures. They are designed to be used in conjunction with Class 9422 flange mounted disconnect switches and circuit breaker operating mechanisms; however, they can be used independently as well. When used on properly designed and gasketed NEMA Type 12 enclosures, they meet NFPA 79 standards.



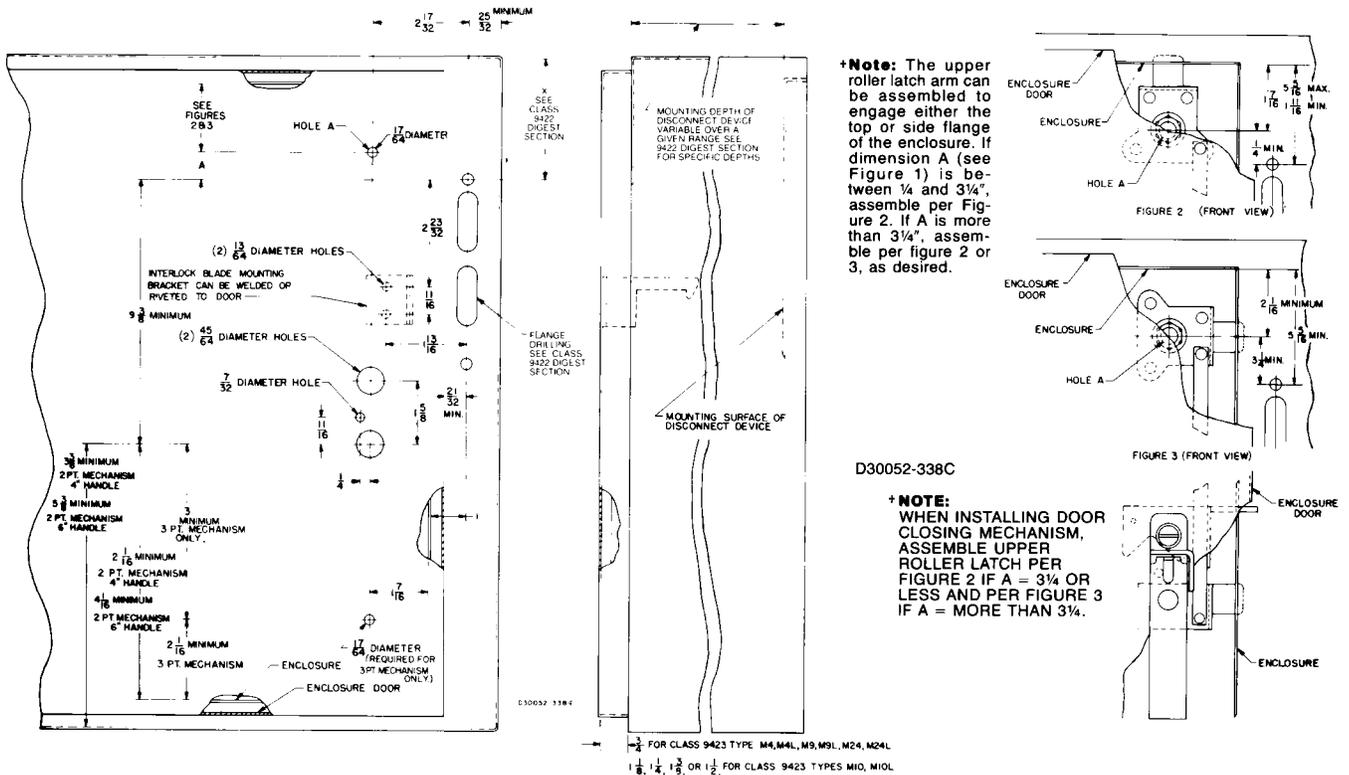
Type M4

Latch bar not included, but most prepunched enclosures that accept Square D operating mechanisms supply a predrilled latch bar.

Description	Use On (Enclosure Type)	Use In Conjunction With	Door Latch Handle Length	Suggested Max. Door Opening	Door Depth	Type
Two Point, Roller Latch, Door Closing Mechanism for Use on Enclosures with DOORS HINGED ON LEFT HAND SIDE.	NEMA Type 4 and 12 Sheet Steel	Class 9422 Types A1, A3, A9	4"	Less than 39"	3/4"	M4▲
			4"	Less than 39"	t	M10
			6"	60"	3/4"	M9▲
Two Point, Roller Latch, Door Closing Mechanism for Use on Enclosures with DOORS HINGED ON RIGHT HAND SIDE.	NEMA Type 4 and 12 Sheet Steel	Class 9422 Types A2, A4, A10	4"	Less than 39"	3/4"	M24
			4"	Less than 39"	t	M4L▲
			6"	60"	3/4"	M10L
Third Roller Latch Kit for Three Point Locking. Used where 3 Point Locking is Desired or Where Door Opening is 39" or more.	NEMA Type 4 and 12 Sheet Steel	Class 9423 Types M4, M9, M4L, M9L	—	—	3/4"	M3▲
			—	—	3/4"	M23

* Suitable for door depths of 1 1/8", 1 1/4", 1 3/8", and 1 1/2".
▲ Package quantity 10.

Enclosure Construction and General Location Information



Class 9423 Door-Closing Mechanisms

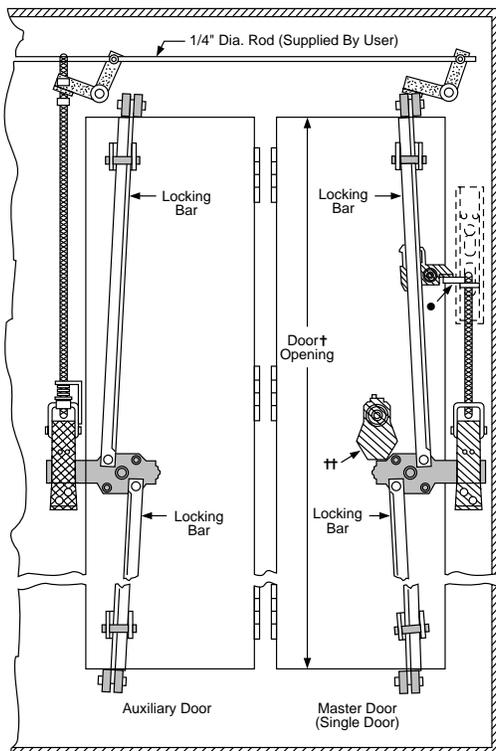
Class 9423 Vault Type for Single and Multi-Door Enclosures

Single or Multi-Door Enclosures — NEMA Type 12 with 40" to 60" Door Opening

The requirements are shown in the table below:

Single-Door Enclosure		Multi-Door Enclosure		
Without Interlocking	With Interlocking	Without Interlocking	With Interlocking	
1 – M6 door closing mechanism 1 – Type M660 locking bar kit	1 – M6 door closing mechanism 1 – Type M660 locking bar kit 1 – Type M5 (use with 9422A handles)	For each door : 1 – M6 door closing mechanism 1 – Type M660 locking bar kit	For Master door : 1 – M6 door closing mechanism 1 – Type M660 locking bar kit 1 – Type M5 (use with 9422A handles)	Each Auxiliary door : 1 – M6 door closing mechanism 1 – Type M660 locking bar kit Necessary quantities of Types M2 and M7 for each door (see below)

Viewed from Inside Enclosure



- Interlocking lever extension of the flange mounted handle mechanism.
- † Actual enclosure opening – not door height.
- ‡ Screwdriver interlock assembly can be ordered separately. Class 9423 Type CEQ2493.

Note: All mechanisms listed on this page are suitable for either left or right hand mounting.

TYPE M6 DOOR CLOSING MECHANISM

The Class 9423 Type M6 door closing mechanism is designed to close and seal 0.75" deep doors of single or multi-door NEMA Type 12 enclosures. The Type M6 can be used on doors hinged on either the left or right hand side. Recommended door openings are from 40" – 60". Vault type handle length is 6".

TYPE M660 LOCKING BAR KITS

The lock bar kit for the Type M6 door closing mechanism contains two lock bars and is available from stock. The bars can be cut to fit door openings through 60". One lock bar kit is required for each Type M6 ordered.

TYPE M5

The Class 9423 Type M5 mechanical interlock kit is designed to interlock a Class 9422 handle mechanism with the Type M6 door closing mechanism. This kit prevents opening the master door (or single door) with the disconnect handle in the "ON" position, making it mandatory to use a screwdriver to gain entry to the enclosure, regardless of the disconnect handle position.

Required Accessories for Auxiliary Doors

TYPE M2

One Type M2 kit is required for each auxiliary door. This kit is required to interlock any auxiliary door(s) with the master door.

TYPE M7

The first auxiliary door requires 2 Type M7 kits. Additional auxiliary doors require only 1 Type M7 kit. The 0.25" diameter rod used to interconnect the M7 kits is furnished by the user. If the distance between any two Type M7 kits exceeds 36", an additional Type M7 kit should be installed to prevent the rod from buckling.



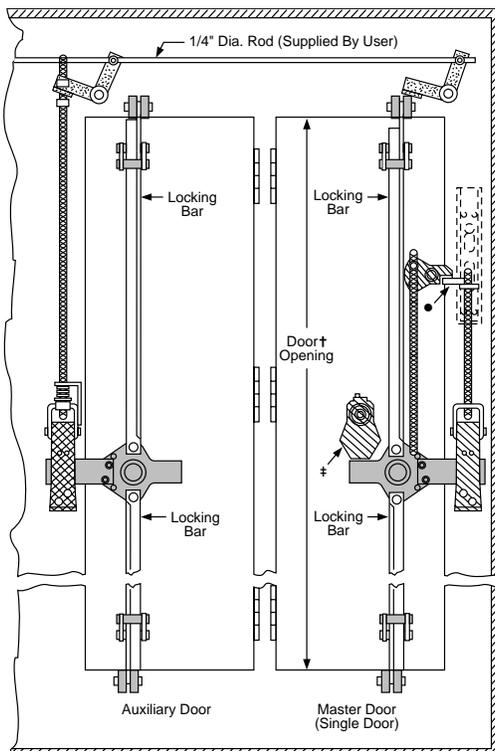
Class 9423 Vault Type For Single And Multi-Door Enclosures

Single Or Multi-Door Enclosures – NEMA Type 12 With 61" To 90" Door Openings

The requirements are shown in the table below:

Single-Door Enclosure		Multi-Door Enclosure		
Without Interlocking	With Interlocking	Without Interlocking	With Interlocking	
1 – M8 door closing mechanism 1 – Type M891 locking bar kit	1 – M8 door closing mechanism 1 – Type M891 locking bar kit 1 – Type M1 (use with 9422A handles)	For each door: 1 – M8 door closing mechanism 1 – Type M891 locking bar kit	For Master door: 1 – M8 door closing mechanism 1 – Type M891 locking bar kit 1 – Type M1 (use with 9422A handles)	Each Auxiliary door: 1 – M8 door closing mechanism 1 – Type M891 locking bar kit Necessary quantities of Types M2 and M7 for each door (see below)

Viewed from Inside Enclosure



- Interlocking lever extension of the flange mounted handle mechanism.
- † Actual enclosure opening - not door height.
- ‡ Screwdriver interlock assembly can be ordered separately. Class 9423 Type CEQ2493.

Note: All mechanisms listed on this page are suitable for either left or right hand mounting.

TYPE M8 DOOR CLOSING MECHANISM

The Class 9423 Type M8 door closing mechanism is designed to close and seal 1.125" deep doors of single or multi-door NEMA Type 12 enclosures. The Type M8 can be used on doors hinged on either the left or right hand side. Recommended door openings are from 61" – 91". Vault type handle length is 8".

TYPE M891 LOCKING BAR KITS

The lock bar kit for the Type M8 door closing mechanism contains two lock bars and is available from stock. The bars can be cut to fit door openings through 91". One lock bar kit is required for each Type M8 ordered.

TYPE M1

The Class 9423 Type M1 mechanical interlock kit is designed to interlock a Class 9422 handle mechanism with the Type M8 door closing mechanism. This kit prevents opening the master door (or single door) with the disconnect handle in the "ON" position, making it mandatory to use a screwdriver to gain entry to the enclosure, regardless of the disconnect handle position.

Required Accessories for Auxiliary Doors

TYPE M2

One Type M2 kit is required for each auxiliary door. This kit is required to interlock any auxiliary door(s) with the master door.

TYPE M7

The first auxiliary door requires 2 Type M7 kits. Additional auxiliary doors require only 1 Type M7 kit. The 0.25" diameter rod used to interconnect the M7 kits is furnished by the user. If the distance between any two Type M7 kits exceeds 36", an additional Type M7 kit should be installed to prevent the rod from buckling.



Class 9423 Door-Closing Mechanisms

Class 9423 Door Closing Mechanisms: Single- and Multi-Door Enclosures

Enclosure Construction and General Location Information for Types M5 and M6 and Types M1 and M8

Drilling and location information shown to the left is complete for a single door enclosure with door hinged on the left side. The top drawing shows a Type M6, M5, and Class 9422 handle mechanism; the bottom drawing shows a Type M8, M1, and Class 9422 handle mechanism.

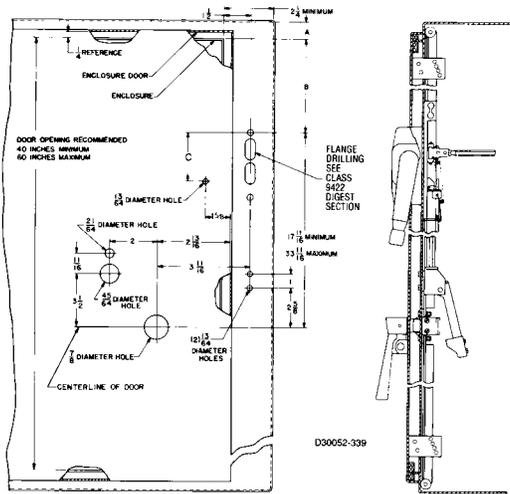
Transpose all horizontal dimensions for doors hinged on the right side.

See the next page for information on flange and channel construction.

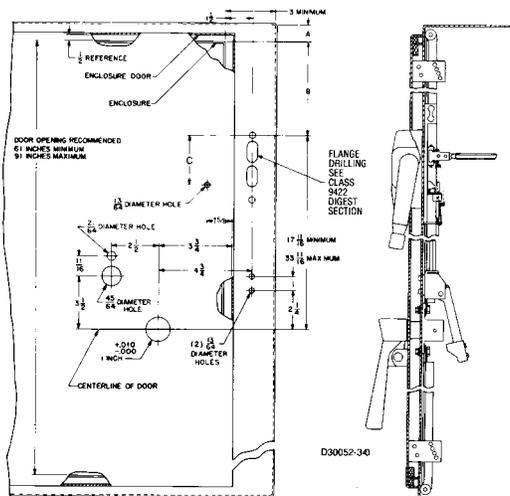
Dimension A

For single-door enclosures and multi-door enclosures without overhead interlocking system, minimum is 1" (25mm). For multi-door enclosures with an overhead interlocking system, minimum is 4.5" (114mm). (The overhead interlocking system consists of the required number of Class 9423 Type M2 and M7 kits for interlocking the auxiliary doors with the master door; see pages 34 and 35 for further information.)

Dimensions B and C



Enclosure with M6, M5, and Class 9422 Handle Mechanism



Enclosure with M8, M1, and Class 9422 Handle Mechanism

Type	Disconnect Devices	If A = 1", Min B =	If A = 4.5", Min B =	C
With M6, M5, and Class 9422 Handle Mechanism				
TCF, TCN	30A Disconnect Switch	3.44 (88)	2.50 (64)	3.19 (81)
TDF, TDN	60A Disconnect Switch	3.44 (88)	2.50 (64)	3.19 (81)
TEF, TEN	100A Disconnect Switch	5.25 (134)	2.50 (64)	3.19 (81)
TF	200A Disconnect Switch	11.63 (296)	8.13 (207)	3.19 (81)
TG	400A Disconnect Switch	15.07 (383)	11.57 (294)	6.75 (172)
RG1	GJL Circuit Breaker	4.85 (124)	2.50 (64)	3.19 (81)
RN1	FAL, FHL Circuit Breaker	4.85 (124)	2.50 (64)	3.19 (81)
RP1	KAL, KHL Circuit Breaker	11.16 (284)	7.66 (195)	3.19 (81)
RR2	ILL Circuit Breaker	17.97 (457)	14.47 (368)	3.19 (81)
RT1	MAL, MHL, MEL, MXL Circuit Breaker	18.63 (474)	15.13 (385)	3.19 (81)
With M8, M1, and Class 9422 Handle Mechanism				
TCF, TCN	30A Disconnect Switch	2.94 (75)	2.50 (64)	3.19 (81)
TDF, TDN	60A Disconnect Switch	2.94 (75)	2.50 (64)	3.19 (81)
TEF, TEN	100A Disconnect Switch	4.75 (121)	2.50 (64)	3.19 (81)
TF	200A Disconnect Switch	11.13 (283)	8.13 (207)	3.19 (81)
TG	400A Disconnect Switch	14.57 (370)	11.57 (294)	5.88 (150)
RG1	GJL Circuit Breaker	4.35 (111)	2.50 (64)	3.19 (81)
RN1	FAL, FHL Circuit Breaker	4.35 (111)	2.50 (64)	3.19 (81)
RP1	KAL, KHL Circuit Breaker	10.66 (271)	7.66 (195)	3.19 (81)
RR2	ILL Circuit Breaker	17.47 (444)	14.47 (368)	3.19 (81)
RT1	MAL, MHL, MEL, MXL Circuit Breaker	18.13 (461)	15.13 (385)	3.19 (81)

Class 9423 Door Closing Mechanisms: Single- and Multi-Door Enclosures

Enclosure Construction Details for Types M5 and M6 Kits

Single- and multi-door enclosures designed to accept the Class 9423 Type M5 and/or Type M6 kits must be constructed according to the dimensions shown on this page. Imperative in the enclosure design is the door depth, which must be 0.75" (19mm) as shown in Figure 1 regardless of whether a disconnect device is used.

The figures are top views of the flange or center channels with various door configurations. Transpose all dimensions for enclosures with doors closing oppositely of those shown.

Flange Construction

Figure 1 shows flange construction. Dimension C is 3" (76mm) with a Type A5 or A7 handle on the enclosure flange. With a Class 9422 Type A1 handle mechanism on the enclosure flange, the minimum dimension for C is 1.75" (45mm); without a Class 9422 Type A1 handle mechanism on the enclosure flange, the minimum dimension for C is 0.69" (18mm).

Channel Construction

Figures 2 and 3 show the type of channel construction where two doors close on a common channel.

In Figure 2, the dimensions apply when a Type M6 kit is used on each door regardless of whether a Class 9423 Type M2 auxiliary door interlock is utilized. In this particular type of construction, the minimum dimension for E is 2" (51mm) with a Class 9423 Type M2 interlock or 1.38" (36mm) without an M2 interlock.

In Figure 3, the dimensions apply when a Class 9422 A1 handle, Class 9423 M5 kit, and Class 9423 M2 interlock are all located in the channel.

Figure 4 shows the type of channel construction where one door closes on a common channel, while another door is hinged on the common channel. For this type of channel construction, the minimum dimension for E is 2.25" (58mm) with a Class 9422 A1 handle mechanism in the channel (with or without a Class 9423 M5 kit) or 1.25" (32mm) without an A1 handle.

Additionally, the minimum for dimension D with this type of channel construction is 3.25" (83mm) with a Class 9422 A1 handle mechanism in the channel (with or without a Class 9423 M5 kit) or 2.25" (58mm) without an A1 handle.

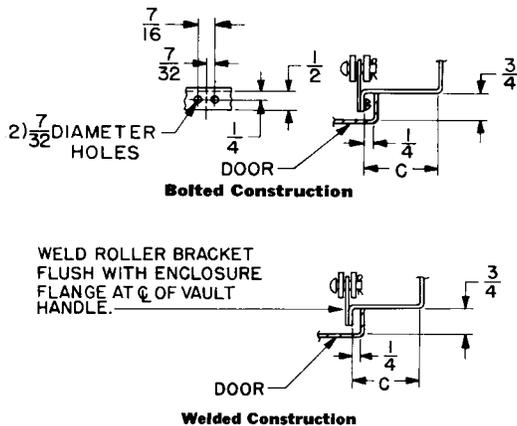


Figure 1

(1) $\frac{1}{4}$ " DRILL IN EACH LEG OF INSIDE DOOR CHANNEL AT ϕ OF VAULT HANDLE
APPLICABLE TO FIGURES 2 & 3

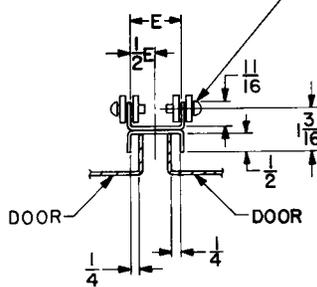


Figure 2

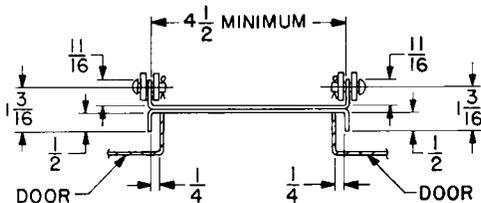
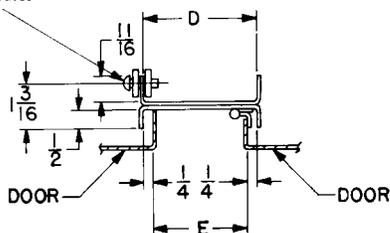


Figure 3

(1) $\frac{1}{4}$ " Drill in Leg of Inside Door Channel at ϕ of Vault Handle.

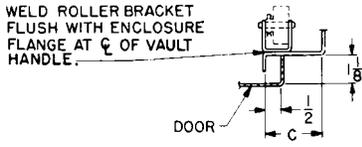


For Two Doors One Closing On and One Hinged On A Common Channel.

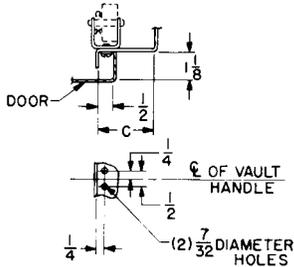
Figure 4



Class 9423 Door-Closing Mechanisms



Welded Construction



Bolted Construction

Figure 1

(1) $\frac{1}{4}$ DRILL IN EACH LEG OF INSIDE DOOR CHANNEL AT C OF VAULT HANDLE APPLICABLE TO FIGURES 2, 3, & 4.

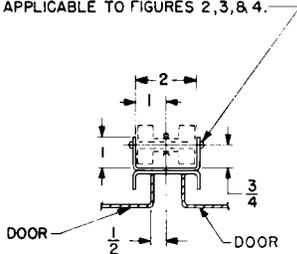


Figure 2

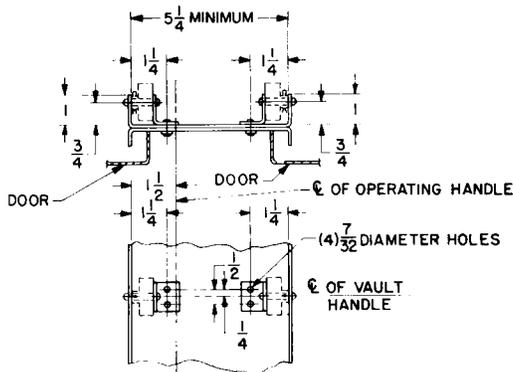


Figure 3

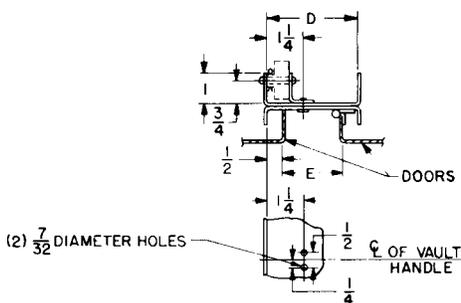


Figure 4

Class 9423 Door Closing Mechanisms: Single- and Multi-Door Enclosures

Enclosure Construction Details for Types M1 and M8 Kits

Single- and multi-door enclosures designed to accept the Class 9423 Type M1 and/or Type M8 kits must be constructed according to the dimensions shown on this page. Imperative in the enclosure design is the door depth, which must be 1.13" (29mm) as shown in Figure 1 regardless of whether a disconnect device is used.

The figures are top views of the flange or center channels with various door configurations. Transpose all dimensions for enclosures with doors closing oppositely of those shown.

Flange Construction

Figure 1 shows flange construction. Dimension C is 3" (77mm) with a Type A5 or A7 handle on the enclosure flange. With a Class 9422 Type A1 handle mechanism on the enclosure flange, the minimum dimension for C is 3" (77mm); without a Class 9422 Type A1 handle mechanism on the enclosure flange, the minimum dimension for C is 1.5" (39mm).

Channel Construction

Figures 2 and 3 show the type of channel construction where two doors close on a common channel.

In Figure 2, the dimensions apply when a Type M8 kit is used on each regardless of whether a Class 9423 Type M2 auxiliary door interlock is utilized.

In Figure 3, the dimensions apply when a Class 9422 Type A1 handle, Class 9423 M1 kit, and a Class 9423 M2 interlock are all located on the channel. (For an alternate door closing method using a similar type of construction, refer to Class 9423 Type M25 on page 41.)

Figure 4 shows the type of channel construction where one door closes on a common channel, while another door is hinged on the common channel. For this type of channel construction, the minimum dimension for E is 3" (77mm) with a Class 9422 A1 handle mechanism in the channel (with or without a Class 9423 M1 kit) or 2" (51mm) without an A1 handle.

Additionally, the minimum for dimension D with this type of channel construction is 4" (102mm) with a Class 9422 A1 handle mechanism in the channel (with or without a Class 9423 M5 kit) or 3" (77mm) without an A1 handle.

Class 9423 Door Closing Mechanisms: Single- and Multi-Door Enclosures

Type M25 Double-Door Interlock Kit

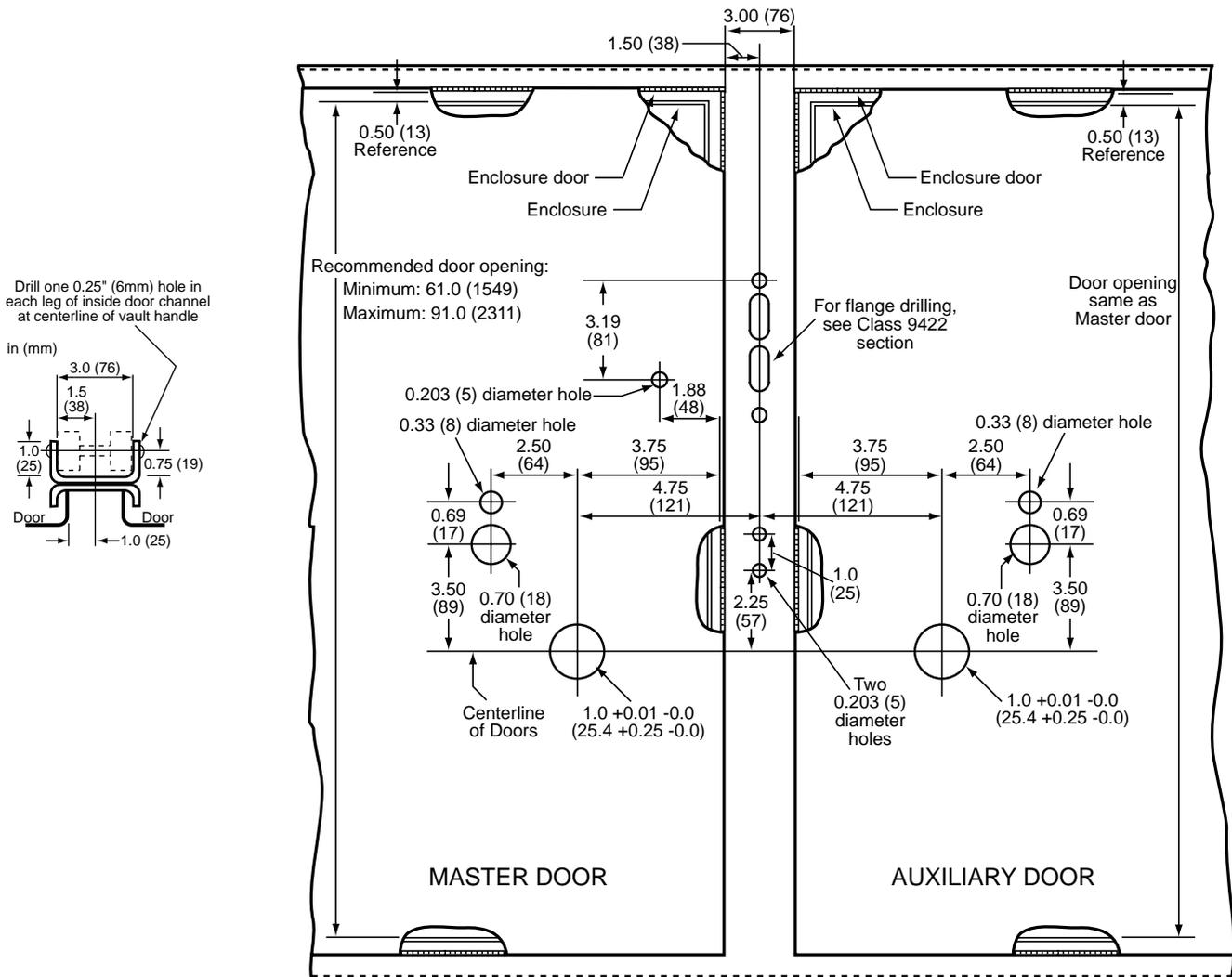
The Class 9423 Type M25 double-door interlock kit is designed for use on enclosures with two doors closing on a center channel, and which has a Class 9422 disconnect device mounted on it. The kit provides for the interlocking of both doors to the disconnect handle with one Class 9423 Type M1 kit. It also prevents the auxiliary door from being opened before the master door is opened, and without the use of a screwdriver to void a mechanical interlock.

Installation

A complete installation of the Type M25 interlock kit requires the following items:

- (2) Class 9423 Type M8 Vault Handles
- (2) Class 9423 Type M891 Lock Bar Kits
- (1) Class 9423 Type M1 Mechanical Interlock Kit
- (1) Class 9423 Type M25 Double-Door Interlock Kit
- (1) Class 9422 Handle Mechanism
- (1) Class 9422 Disconnect Device

Enclosure Construction and General Location Information



Class 9423 Door-Closing Mechanisms

NOTES



Class 9423 Door-Closing Mechanisms

NOTES



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