

Section 8

Operating Mechanisms and Disconnect Switches



UL508 Motor Disconnect Switch



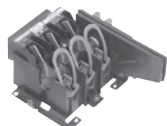
UL98 Fusible Switch



UL508 VLS Switch



UL98 VLS Switch



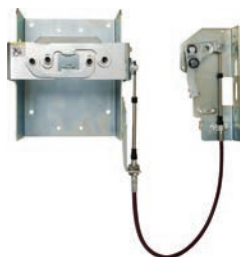
UL98 Style Flange Handle Disconnect Switch



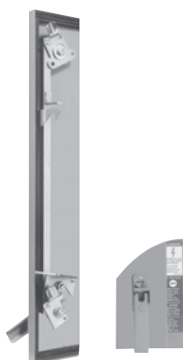
9421 Type L Circuit Breaker Mechanism



9422 Type R Circuit Breaker Mechanism



9422 Type C Circuit Breaker Cable Operator



9423 Door Closing Mechanisms

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Selection Guide



Class	MD	Vario	LK4	VLS		GS2
Type	Motor disconnect switches	Manual motor control switches	Nonfusible IEC style disconnect switches	Disconnect switches	Disconnect switches	Fusible IEC style disconnect switches
UL Rating	UL 508	UL 508	UL 98	UL 508	UL 98	UL 98
Handle Type	Rotary	Rotary	Rotary	Rotary	Rotary	Rotary
Mounting	—	Door or panel	—	DIN Rail (Rear Mounting) Door Mounting	DIN Rail (Rear Mounting) Door Mounting	Flange with cable mechanism panel
Voltage (max.)	600 Vac	600 Vac	600 Vac	690 Vac	690 Vac	600 Vac
Current Ratings	30–60	10–115	30–1200	16–63 A	63–125 A	30–800
Horsepower Ratings (max.)	7.5–40	2–60	7.5–500	1–30	3–60	7.5–500
Enclosure Type	Non-Metallic NEMA 1, 3, 3R, 4, 4X, and 12	Metallic: NEMA 1, 12, 4, 4X Plastic: IP55, NEMA Type 4X	Handle ratings: NEMA 1, 3R, 4, 4X, 12	NEMA 1, 12, 3R, 4, and 4X; IEC IP65, IP66	NEMA 1, 12, 3R, 4, and 4X; IEC IP65, IP66	Handle ratings: NEMA 1, 3R, 4, 4X, 12
Accessories	Power poles and auxiliary contacts	Power poles and auxiliary contacts	Auxiliary contacts and power lugs	Power poles and auxiliary contacts	Power poles and auxiliary contacts	Auxiliary contacts and power lugs
Approvals	UL File E164864 IEC standard 60947-3	UL File E164864 NLRV CSA File LR 81630 Class 3211 05	UL File E191098 WP2X / WP2X7 CSA 703149 Class 4652 04	UL File E487906 UL60947-4-1/CSA 22.2 n ° 60947-4-1-14	UL File E487907 UL98/CSA 22.2 n° 4	UL File E191098 WP2X / WP2X7 CSA 703149 Class 4652 04
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Class	9422	9421	9422	9423
Type	NEMA style fused or non-fusible disconnect switches	Circuit breaker operating mechanisms	Circuit breaker operating mechanisms	Door closing mechanisms
UL Rating	UL98	—	—	—
Handle Type	Flange Adjustable rod or cable mechanism	Rotary	Flange Adjustable rod or cable mechanism	Rotary, works in conjunction with 9422 handle mechanisms
Mounting	Panel or bracket mount	Panel	Panel	—
Load Voltage (max.)	600 Vac	600 Vac	600 Vac	—
Current Ratings	30–400	Circuit breaker frame sizes 100–1200	Circuit breaker frame sizes 100–1200	—
Horsepower Ratings (max.)	7.5–350	—	—	—
Enclosure Type	Handle ratings: NEMA 1, 3R, 4, 4X, 12	Handle ratings: NEMA 1, 3R, 4, 4X, 12	Handle ratings: NEMA 1, 3R, 4, 4X, 12	Handle ratings: NEMA 4 and 12 sheet steel or stainless
Accessories	Auxiliary contacts	Auxiliary contacts	Auxiliary contacts	Right or left-hand operation
Approvals	UL File E52639 WHTY2 CSA LR44199 Class 4652-04	UL File E62922 DIHS2 CSA LR44199 Class 3211 07	UL File E62922 DIHS2 CSA LR44199 Class 3211 07	—
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Identification System

Mini-Vario and Vario rotary manual motor-control switches from 12–175 A are suitable for on-load making and breaking of resistive or mixed resistive inductive circuits where frequent operation is required. They can also be used for direct switching of motors in utilization categories AC-3 and DC-3 specific to motors. Vario manual motor-control switches are suitable for isolator applications with fully visible indication (since the handle cannot be in the open position unless all the contacts are actually open and separated by the appropriate isolating distance), and the handles are padlockable.

The Mini-Vario and Vario catalog numbers are described in Table 8.1.

Table 8.1: Identification System

		V	CF	N12	GE
Model (V-Vario, K-Operator)					
Operator Type/ Accessory Designation					
CD	Single hole Red & Yellow				
CF	Four hole Red & Yellow				
CCD	Single hole Red & Yellow w/ extension shaft				
CCF	Four hole Red & Yellow w/ extension shaft				
Blank	No operator or accessory				
BD	Single hole Black and Gray				
BF	Four hole Black and Gray				
VE	Switch with Red handle installed on unit (one padlock only)				
VD	Switch with Black handle installed on unit (no padlock provision)				
Z	Accessory, power pole, neutral or ground				
Switch Type (Switches and contacts are dual rated, UL/IEC).					
Blank		1	Vario 20/32 A		
N12	Mini-Vario 10/12 A	2	Vario 25/40 A		
N20	Mini-Vario 16/20 A	3	Vario 45/63 A		
02	Vario 10/12 A	4	Vario 63/80 A		
01	Vario 16/20 A	5	Vario 100/125 A		
0	Vario 20/25 A	6	Vario 115/175 A		
Enclosure Type (if applicable)					
Blank	No Enclosure	G30, A30, W30 Type 1/12/4/4X Metallic (Class 9421)			
GE	Mini-Vario IP55 Non-Metallic	GU Vario IP55 Non-Metallic			



Mini-Vario

Table 8.2: Assembled Switches—Degree of Protection IP65, Type 1 and 12

Rating (A)		Complete Switches for Door Mounting (3-Padlock)		Complete Switches for Rear Mounting, Includes Extension Shaft (3-Padlock)
		Red/Yellow (Single Hole)	Black/Gray (Single Hole)	Red/Yellow (Single Hole)
UL	IEC	Catalog No.	Catalog No.	Catalog No.
10	12	VCDN12	VBDN12	VCCDN12
16	20	VCDN20	VBDN20	VCCDN20

Table 8.3: Mini-Vario Enclosed Switches

Catalog No.	Complete Switches Mounted in IP55 Non-Metallic Enclosure Description
VCFN12GE	Red/Yellow Mounted In Sealable Enclosure, Non-UL Listed, Non-NEMA Rated
VCFN20GE	

Table 8.4: Component Parts

Catalog No.	Description
VN12 [1]	10/12 A switch only
VN20 [1]	16/20 A switch only
VZN12 [1]	Add on power pole for 10/12 A switch
VZN20 [1]	Add on power pole for 16/20 A switch
VZN11	Neutral Pole with early make, late break for VN12 or VN20 switch
VZN14	Grounding module for VN12 or VN20
VZN05	N.O. late make auxiliary contact [2]
VZN06	N.C. early break auxiliary contact [2]
VZN26	Single-pole shroud for auxiliary contacts
VZN08	Three-pole shroud for VN12 or VN20

Table 8.5: Operators and Accessories

Catalog No.	Description
KCC1YZ	45 x 45 mm Red & Yellow operator
KCD1PZ	60 x 60 mm Red & Yellow operator
KAD1PZ	60 x 60 mm Black & Gray operator
VZN17	300–340 mm shaft extension
VZN30	400–430 mm shaft extension
KZ32	Door interlocking plate for 45 or 60 mm operator
KZ83	Door mounting plate for 45 or 60 mm operator



[1] Switches/contacts are dual rated (UL/IEC).
[2] Auxiliary contacts are dual rated (UL/IEC 10/12 A).



Vario

Table 8.6: NEMA Type 1 and 12 Assembled Switches for Door Mounting

Rating (A)		Complete Switches (Switch and Handle) for Door Mounting (3-padlock)			
		Red/Yellow (Four Hole)	Black/Gray (Four Hole)	Red/Yellow (Single Hole)	Black/Gray (Single Hole)
UL	IEC	Catalog No.	Catalog No.	Catalog No.	Catalog No.
10	12	VCF02	VBF02	VCD02	VBD02
16	20	VCF01	VBF01	VCD01	VBD01
20	25	VCF0	VBF0	VCD0	VBD0
20	32	VCF1	VBF1	VCD1	VBD1
25	40	VCF2	VBF2	VCD2	VBD2
45	63	VCF3	VBF3	—	—
63	80	VCF4	VBF4	—	—
100	125	VCF5	VBF5	—	—
115	175	VCF6	VBF6	—	—

Table 8.7: NEMA Type 1 and 12 Assembled Switches for Rear Mounting

Rating (A)		Complete Switches for Rear Mounting with Extension Shaft (3-Padlock) ^[3]		Switches with Handles Installed on Unit, DIN Rail Mount Only	
		Red/Yellow (Four Hole)	Red/Yellow (Single Hole)	Red/Yellow (1-Padlock)	Black/Gray (No-Padlock)
UL	IEC	Catalog No.	Catalog No.	Catalog No.	Catalog No.
10	12	VCCF02	VCCD02	—	—
16	20	VCCF01	VCCD01	—	—
20	25	VCCF0	VCCD0	VVE0	VVD0
20	32	VCCF1	VCCD1	VVE1	VVD1
25	40	VCCF2	VCCD2	VVE2	VVD2
45	63	VCCF3	—	VVE3	VVD3
63	80	VCCF4	—	VVE4	VVD4
100	125	VCCF5	—	—	—
115	175	VCCF6	—	—	—

Vario Non-Metallic Enclosed Switches

The Vario Motor Disconnect Switch is also offered as an enclosed switch. The three-pole version makes the Vario switch ideal for manual motor control applications. They are compact, easy to wire and connect, and come undrilled to allow cable entry positions.

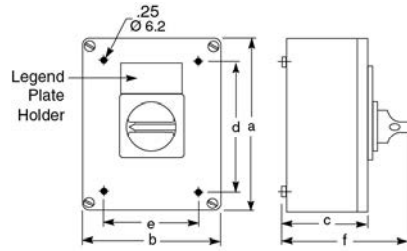
NOTE: VC-GUN enclosures are UL approved.

Table 8.8: Non-Metallic Enclosed Switch ^{[4] [5]}

Ampere Size UL/IEC	IP55-PVC 3-Pole, NEMA Type 1 & 12	
	Catalog No.	
20/32	VC1GUN	
25/40	VC2GUN	
45/63	VC3GUN	
63/80	VC4GUN	
100/125	VC5GUN	
115/175	VC6GUN	

Table 8.9: Dimensions

Type	No. of Poles	a	b	c	d	e	f
VC1GUN	3	6.5 (164)	4.8 (121)	3.4 (87)	5.6 (141)	3.9 (98)	5.2 (132)
VC2GUN							
VC3GUN							
VC4GUN	3	7.6 (193)	6.5 (164)	3.4 (87)	6.7 (170)	5.6 (141)	5.2 (132)
VC5GUN							
VC6GUN	3	11.5 (291)	9.5 (241)	5.0 (128)	10.6 (269)	8.6 (219)	7.5 (191)



VC-GUN

[3] Complete switch includes handle operator, shaft, door interlock plate, and line terminal shroud.
 [4] Assembled, includes switches mounted in enclosure with handle.
 [5] Refer to Table 8.11 Vario Manual Motor Control Switches, IEC, page 8-5 and Table 8.12 Vario Manual Motor Control Switches, page 8-5 for horsepower ratings.

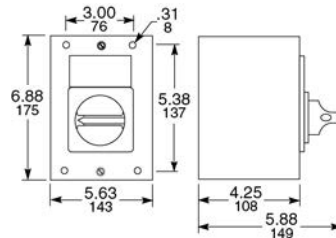


Vario Metallic Enclosed Switches

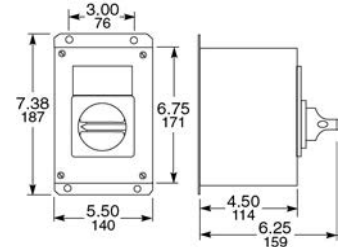
Vario switches meet UL508 requirements as both enclosed and open manual motor controllers. They are also marked "Suitable as Motor Disconnect" allowing installation on the load side of the motor branch circuit short-circuit and ground-fault protection. If motor branch circuit short-circuit and ground-fault protection is needed, use a GS1 or 9422 fusible switch or circuit breaker meeting NEC 430.52 requirements.

Table 8.10: Metallic Enclosed Switches [6] [7]

Rating (A)		Horsepower Ratings			NEMA Type 1	NEMA Type 12	NEMA Type 4/4X [7]
UL	IEC	240 V	480 V	600 V	Catalog No.	Catalog No.	Catalog No.
20	32	5	10	10	9421V1G30	9421V1A30	9421V1W30
25	40	5	10	15	9421V2G30	9421V2A30	9421V2W30



Class 9421 NEMA Type 1 V1G30, V2G30



Class 9421 NEMA Type 4, 4X, 12 V1W30, V2W30, V1A30, V2A30

Vario Manual Motor Control Switches

The V1 and V2 come in metallic enclosures (NEMA Type 1, 4, 4X, and 12). The NEMA 1 enclosure comes with conduit knockouts top and bottom. To factory install a VZ7 auxiliary contact in these metallic enclosures, add Form X11 to the end of the catalog number (for example, 9421V1G30X11). To factory install a VZ20 auxiliary contact in these enclosures, add Form X20 to the end of the catalog number (for example, 9421V1W30X20).



Manual Motor Control Switch

Table 8.11: Vario Manual Motor Control Switches, IEC

Rating (A) IEC	kW Rating—3-Pole Switch Body					
	230 V	240 V	400 V	415 V	500 V	690 V
12	3	3	4	4	5.5	7.5
20	4	4	5.5	5.5	7.5	11
25	5.5	5.5	7.5	7.5	11	15
32	5.5	5.5	11	11	11	15
40	7.5	7.5	15	15	18.5	15
63	15	15	22	22	30	22
80	18.5	18.5	30	30	37	30
125	22	22	37	37	45	37
175	30	30	45	45	55	45

Table 8.12: Vario Manual Motor Control Switches

Rating (A)	Horsepower Rating			Shaft Size mm	3-Pole Switch Body Type
	240 V	480 V	600 V		
10	2	5	5	6	V02
16	3	7.5	7.5	6	V01
20	5	10	10	6	V0
20	5	10	10	6	V1
25	5	10	15	6	V2
45	10	20	30	8	V3
63	15	30	40	8	V4
100	25	50	50	8	V5
115	30	50	60	8	V6

Table 8.13: Switch Body

Rating (A)		Shaft Size mm	3-Pole Switch Body Type
UL	IEC		
10	12	6	V02
16	20	6	V01
20	25	6	V0
20	32	6	V1
25	40	6	V2
45	63	8	V3
63	80	8	V4
100	125	8	V5
115	175	8	V6

NOTE: Refer to Table 8.10 and Table 8.12 for horsepower ratings.

[6] Assembled, includes switches mounted in enclosure with handle.

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



Single-Hole Operator



Four-Hole Operator (All except KDF3PZ and KBF3PZ)



Four-Hole Operator KDF3PZ and KBF3PZ



Low-Profile Handle KCD1YZ



KZ67

Table 8.14: NEMA Type 1 and 12 Handle Operators: V02–V2 (6 mm Shaft), V3–V6 (8 mm Shaft) [8]

Operator Type		Red/Yellow Single Hole 45 x 45 mm	Red/Yellow Four Hole 45 x 45 mm	Black/Gray Single Hole 45 x 45 mm	Black/Gray Four Hole 45 x 45 mm
Switches	No. of Padlocks	Catalog No.	Catalog No.	Catalog No.	Catalog No.
V02–V2	0	KCC1LZ	KCE1LZ	KAC1BZ	KAE1BZ
V02–V2	1	KCC1YZ	KCE1YZ	—	—
Operator Type		Red/Yellow Single Hole 60 x 60 mm	Red/Yellow Four Hole 60 x 60 mm	Black/Gray Single Hole 60 x 60 mm	Black/Gray Four Hole 60 x 60 mm
V02–V2	0	KDD1PZ	KDF1PZ	KBD1PZ	KBF1PZ
V3–V4	0	—	KDF2PZ	—	KBF2PZ
V02–V2	3	KCD1PZ	KCF1PZ	KAD1PZ	KAF1PZ
V3–V4	3	—	KCF2PZ	—	KAF2PZ
Operator Type		Red/Yellow Four Hole 90 x 90 mm	Black/Gray Four Hole 90 x 90 mm		
V5–V6	0	KDF3PZ	KBF3PZ		
V5–V6	3	KCF3PZ	KAF3PZ		

Table 8.15: Low Profile Handle Operators [8]

Operator Type		Red/Yellow Single Hole 60 x 60 mm	Red/Yellow Four Hole 60 x 60 mm	Black/Gray Single Hole 60 x 60	Black/Gray Four Hole 60 x 60 mm
Switches	No. of Padlocks	Catalog No.	Catalog No.	Catalog No.	Catalog No.
V02–V2	3	KCD1YZ	KCF1YZ	KAD1XZ	KAF1XZ
V3–V4	3	—	KCF2YZ	—	KAF2XZ
Operator Type		Red/Yellow Four Hole 90 x 90 mm	Black/Gray Four Hole 90 x 90 mm		
V5–V6	3	KCG2YZ	KAG2XZ		

Table 8.16: Gasket Kits

Catalog No.	Description
KZ65	45 x 45 mm gasket for V02-V2 for 4-hole type handles (order in quantities of 5)—IP65
KZ66	60 x 60 mm gasket for V02-V2 for 4-hole type handles (order in quantities of 5)—IP65
KZ62	60 x 60 mm gasket for V3-V4 for 4-hole type handles (order in quantities of 5)—IP65
KZ67	90 x 90 mm gasket for V5-V6 for 4-hole type handles (order in quantities of 5)—IP65

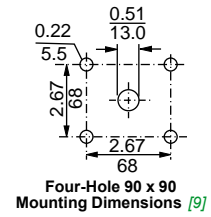
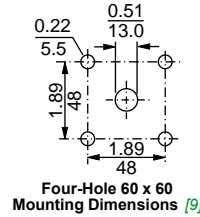
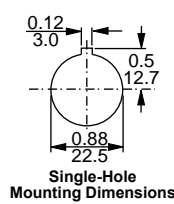
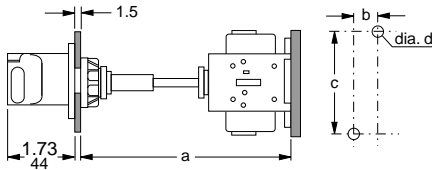


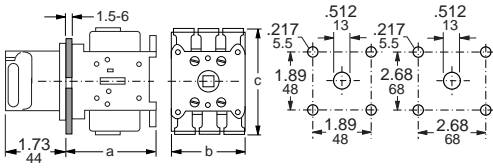
Table 8.17: Rear/Panel Mounting Switch Body Dimensions

Type	Shaft Extension	Dimensions							
		a		b		c		d	
		in.	mm	in.	mm	in.	mm	in.	mm
V02 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						



[8] When using these handles for replacements on the non-metallic enclosed switches, the handle shaft that comes with the enclosure must be reused. See Section 15 of the Supplemental Digest.

[9] The door interlock plate included with VCC Kits has the same drilling as the handle operators.



Mini-Vario and Vario™ Accessories

Table 8.18: Door Mounting Switch Body Dimensions

Switch Type	Dimensions						Weight Approx. lbs.
	a		b		c		
	in.	mm	in.	mm	in.	mm	
V02 to V2 [10]	2.83	72	2.17	55	2.91	74	0.44
V02 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

Table 8.19: Shaft Extension and Door Interlock

Switch Type	Maximum Panel Depth		Shaft Extension Kit	Door Interlock Plate	Door Mounting Plate
	in.	mm			
V02 to V2	13.0	330	VZ17	KZ32	KZ83
V3, V4	12.6	320	VZ18	KZ74	KZ81
V5, V6	13.8	351	VZ18	KZ74	KZ81
V02 to V2	16.9	429	VZ30	KZ32	KZ83
V3, V4	16.5	419	VZ31	KZ74	KZ81
V5, V6	17.7	450	VZ31	KZ74	KZ81

Table 8.20: Accessories

Switch Type	Line Side Terminal Shroud For Main Switch	Terminal Shroud for Add-on Power Pole	Terminal Shroud for Auxiliary Contact
V02 to V2	VZ8	VZ26	VZ29
V3, V4	VZ9	VZ27	VZ29
V5, V6	VZ10	VZ28	VZ29

Table 8.21: Add-On Contact Modules

Switch Type	Main Pole Module	Main Pole	Ampere Rating UL/IEC	Auxiliary Contacts Rated UL/IEC 10/12 A	
				1 N.O., 1 N.C.	2 N.O.
V02	VZ02	VZ02	10/12	VZ7 Early Break, Late Make.	VZ20
V01	VZ01	VZ01	16/20		
V0	VZ0	VZ0	20/25		
V1	VZ1	VZ1	20/32		
V2	VZ2	VZ2	25/40		
V3	VZ3	VZ3	45/63		
V4	VZ4	VZ4	63/80		
V5 V6	— —	— —	— —		

Table 8.22: Add-On Contact Modules

Switch Type	Neutral Modules Early Make/Late Break	Grounding Module	Auxiliary Contacts	
	Catalog No.	Catalog No.	Catalog No.	Description
V02-V2	VZ11	VZ14	VZ7	1 Late Make N.O. & 1 Early Break N.C.
V3-V4	VZ12	VZ15	VZ20	2 N.O. Contacts
V5-V6	VZ13	VZ16	—	—

Table 8.23: Labeling Accessories

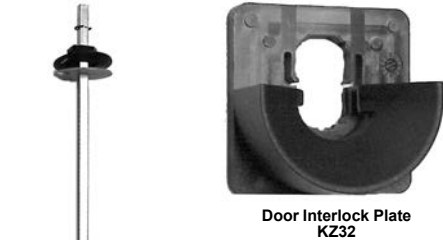
Nameplate Holder with Nameplate		Nameplate Holder Only	Nameplate Only	
Size	Catalog No.	Catalog No.	Use With	Catalog No.
45 x 45 mm	KZ13	KZ14	KZ14	KZ76
60 x 60 mm	KZ15	KZ16	KZ16	KZ77
90 x 90 mm	KZ103	KZ101	KZ1010	KZ100

Table 8.24: Shrouds

Switch Type	3-Pole Shroud	Single-Pole Shroud	
	Catalog No.	For Add-On Power Pole	Catalog No.
V02-V2	VZ8	VZ02-VZ2, VZ11 & VZ14	VZ26
V3-V4	VZ9	VZ23, VZ4, VZ12 & VZ15	VZ27
V5-V6	VZ10	VZ13 & VZ16	VZ28
—	—	For 2-Pole Aux. Contact	VZ29

Table 8.25: Main Pole Module Dimensions

Switch Type	Dimensions						Weight Approx. lbs.
	a		b		c		
	in.	mm	in.	mm	in.	mm	
V02 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

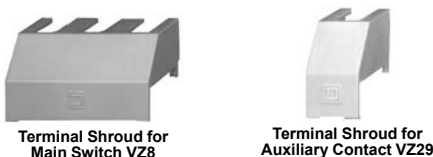


Shaft Extension Kit

Door Interlock Plate KZ32

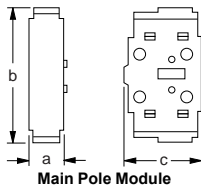


Add-On Contact Module



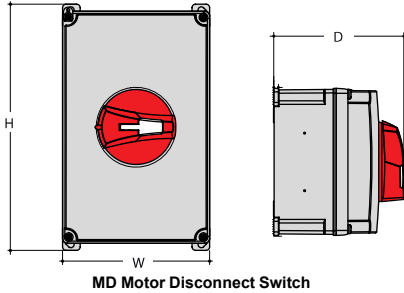
Terminal Shroud for Main Switch VZ8

Terminal Shroud for Auxiliary Contact VZ29



Main Pole Module

[10] Dimensions for single-hole mounting.



MD Motor Disconnect Switch

MD Motor Disconnect Switches

The MD motor disconnect switch is listed UL 508 Suitable for Motor Control (UL File E164864) and conforms to IEC standard 60947-3. It is in a compact NEMA 4X enclosure suitable for use in NEMA 1, 3, 3R, 4, 4X, and 12 applications. The MD's key benefits are an extremely small footprint, a more economically efficient NEMA 4X solution, and a handle interlock preventing cover removal when the switch is in the ON position.

Switch features:

- Suitable for NEMA 1, 3R, 4, 4X, and 12 enclosure applications.
- Complies with OSHA lockout/tagout requirements—accepts up to three 8 mm padlocks.
- For accessories, see [Table 8.20](#).

Table 8.26: MD Motor Disconnect Switch—Non-Metallic NEMA 1, 3, 3R, 4, 4X, and 12 Enclosure

Amperes	Cat. No.	Maximum Horsepower Ratings			Height (in.)	Width (in.)	Depth (in.)
		Three-Phase Vac					
		220–240	440–480	600			
30	MD3304X	7.5	20	25	6.38	3.9	4.37
60	MD3604X	20	40	40	8.27	4.94	4.37

Table 8.27: MD Motor Disconnect Accessories

Cat. No.	Description
MDSAN20	2 N.O. auxiliary contact module
MDSAN11	1 N.O. and 1 N.C. auxiliary contact module
MDS30P	30 A add on power pole

Refer to Catalog 9400CT1601

Disconnect Switches, 16–125 A

- Versions: DIN rail mounting, door mounting, and rear mounting
- Wide range of accessories
- Changeover switches
- Conforming to UL 60947-4-1 (16–63 A) or UL 98 (63–125 A) specifications



Style	DIN Rail, Rear Mounting									Door Mounting								
	36 mm (1.42 in.)				70 mm (2.75 in.)					36 mm (1.42 in.)				70 mm (2.75 in.)				
Width	16	25	32	40	63	63	80	100	125	16	25	32	40	63	80	100	125	
Ampere rating																		
Three pole	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
4th pole—simultaneous closing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
4th pole—early-make closing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Fuse holder	•	•	•															
Mechanical 6-8 pole coupling system	•	•	•	•	•	•	•	•	•									
Mechanical interlock for line switching	•	•	•	•	•	•	•	•	•									

Interpreting the Catalog Number

Some combinations are not available. Use this table only for interpreting the catalog number.

Table 8.28: Interpreting the Catalog Number

Example	VLS	3P	016		R	1
Description	Disconnect switch	1P = 1 pole 3P = 3 poles	016 = 16 A 025 = 25 A 032 = 32 A 040 = 40 A	063 = 63 A 080 = 80 A 100 = 100 A 125 = 125 A	D = Door mounting R = DIN rail mounting	1 = Small size (16–63 A), UL 508 2 = Large size (63–125 A), UL 98
Example	VLSH	2	S		5	R
Description	Rotary handle	1 = Recessed, 65 x 65 mm 2 = Protruding, 65 x 65 mm 3 = Pistol grip, 75 mm dia. 4 = Protruding, 48 x 48 mm	H = Hole fixing S = Screw mounting		5 = 5 mm shaft opening 7 = 7 mm shaft opening	B = Black BC = Black, changeover BD = Black, defeatable R = Red RD = Red, defeatable
Example	VLSS	150	5			
Description	Shafts	Length: 150–500 mm	Cross-section: 5 = 5 mm 7 = 7 mm			
Example	VLS	1P	040	R	1	S
Description	Additional Poles	Number of Poles: 1P = 1 Pole	Current: 016 = 16 A to 125 = 125 A	Mounting: R = DIN rail mounted D = Door mounted	Body Size: 1 = Small size (16–63 A) 2 = Large size (63–125 A)	Closing: S = Simultaneous closing E = Early Make closing
Example	VLS	1N	R		1	
Description	Ground and Neutral Terminals	1G = 1 Pole Ground terminal 1N = 1 Pole Neutral terminal	R = DIN rail mounted D = Door mounted		1 = Small size (16–63 A), UL 508 2 = Large size (63–125 A), UL 98	
Example	VLS	A	11	R	1	S
Description	Auxiliary contacts	A = Auxiliary contact	10 = 1 N.O. 11 = 1 N.O. + 1 N.C.	R = DIN rail mounted D = Door mounted	Blank = Size 1 and 2 1 = Size 1 2 = Size 2	S = Simultaneous closing E = Early make closing



VLS3P016R1–
VLS3P063R1



Product Overview

Compact Size

The three-pole 16–63 A disconnect switches are made up of a single unit body, a mere 36 mm (1.4 in.) wide, while those rated 63–125 A are only 70 mm (2.8 in.) wide.

Accessory Flexibility

Mounting and removal of the fourth pole and add-on blocks are simple and quick operations with no need for tools.

Certifications

All VLS disconnect switches are certified by cCSAus and are UL Listed for Canada and USA:

- 16–63 A types: certified according to UL 60947-4-1 / CSA 22.2 n° 60947-4-1-14 standards
- 63–125 A types: certified according to UL 98 / CSA 22.2 n° 4 standards

Three-Pole Disconnect Switches

Table 8.29: Certifications and Compliance (● = certification obtained)

Catalog number	cULus per UL 60947-4-1 / CSA C22.2 n° 60947-4-1-14 UL Listed (File E487906)	cULus per UL 98 / CSA C22.2 n° 4 UL Listed (File E487907)	IEC/EN 60947-1, IEC/EN 60947-3
VLS3P016R1– VLS3P040R1	●	—	Compliant
VLS3P063R1	●	—	
VLS3P016D1– VLS3P040D1	●	—	
VLS3P063R2– VLS3P125R2	—	●	
VLS3P063D2– VLS3P125D2	—	●	



VLS3P063R2–
VLS3P125R2



VLS3P016D1–
VLS3P040D1



VLS3P063D2–
VLS3P125D2

Table 8.30: Selection—Three-Pole Disconnect Switches

Catalog number	IEC conventional free air thermal current (I _{th}), AC21A (≤690 V) (A)	IEC rated operational current (I _e) AC22A (≤690 V), AC23A (≤415 V) (A)	UL general use at 600 Vac (A)
DIN rail mounting version, complete with black handle. For rear-mounting version, separately purchase the handle and shaft extension. Refer to page 8-16 and page 8-18.			
VLS3P016R1	16	16	16
VLS3P025R1	25	25	25
VLS3P032R1	32	32	32
VLS3P040R1	40	40	40
VLS3P063R1	63	45	60
VLS3P063R2	63	63	60
VLS3P080R2	80	80	100
VLS3P100R2	100	100	100
VLS3P125R2	125	125	100
Door-mounting version (no shaft required). Separately purchase the handle. Refer to page 8-16.			
VLS3P016D1	16	16	16
VLS3P025D1	25	25	25
VLS3P032D1	32	32	32
VLS3P040D1	40	40	40
VLS3P063D2	63	63	60
VLS3P080D2	80	80	100
VLS3P100D2	100	100	100
VLS3P125D2	125	125	100

Strokes of VLS switch poles

	Travel 0 → 1	0°	30°	60°	90°
VLS3P016R1–VLS3P063R1				60°	
VLS3P016D1–VLS3P040D1				60°	
VLS3P063R2–VLS3P125R2			55°		
VLS3P063D2–VLS3P125D2			55°		
	Off				On

Table 8.31: UL / CSA Ratings

Catalog number	Horsepower						General use at 600 Vac (A)	Short-circuit rating at 600 Vac (kA)	Max. fuse rating at 600 V (A)
	1 phase		3 phase		240 V	480 V			
	120 V	240 V	200–208 V	240 V	480 V	600 V			
UL 60947-4-1 and CSA 22.2 n° 60947-4-1-14 [1]									
VLS3P016**	1	2	5	5	10	10	16	5	30 (Type RK5)
VLS3P025**	1.5	3	7.5	7.5	15	20	25	5	30 (Type RK5)
VLS3P032**	2	5	10	10	20	20	32	5	45 (Type RK5)
VLS3P040**	2	5	10	15	20	25	40	5	45 (Type RK5)
VLS3P063R1	2	7.5	10	15	30	30	60	5	45 (Type RK5)
UL 98 and CSA C22.2 n° 4 [2]									
VLS3P063**	3	7.5	20 [3]	20	40	40	60	50	60
VLS3P080**	3	10	25 [3]	25	40	40	100	50	100
VLS3P100**	5	10	30 [3]	30	50	50	100	50	100
VLS3P125**	7.5	10	30 [3]	30	60	60	100	50	100

[1] Ratings are valid for VLS3P***R* and VLS3P***D* types, according to UL 60947-4-1 and CSA 22.2 n° 60947-4-1-14. UL Listed for USA and Canada (cULus - File E487907) as Manual Motor Controllers, while the UL designation is "General Purpose Switch. Interrupteur Usage General" and "Suitable As Motor Disconnect."

[2] Ratings are valid for VLS3P***R* and VLS3P***D* types, according to UL 98 and CSA C22.2 n° 4. UL Listed for USA and Canada (cULus - File E487907) as Open Type Switches – Open type unfused switch, while UL designation is "General Purpose Switch. Interrupteur Usage General."

[3] Voltage value is not considered in UL98 / CSA 22.2 n° 4 standards, and so is not indicated in the UL product marking.



VLS1P***R•S
VLS1P***R•E



VLS1P040D1S
VLS1P040D1E

Strokes of VLS poles (switch and add-on pole)

	Travel 0 → 1	0°	30°	60°	90°
VLS3P016R1/D1–VLS3P040R1/D1, VLS3P063R1 Main poles				60°	
VLS1P040R1S–VLS1P063R1S Simultaneous fourth-pole add on				60°	
VLS1P040R1E/D1E, VLS1P063R1E Early-make fourth-pole add on				55°	
VLS3P063R2/D2–VLS3P125R2/D2 Main poles				55°	
VLS1P063R2S–VLS1P125R2S/D2S Simultaneous fourth-pole add on				55°	
VLS1P125R2E/D2E Early-make fourth-pole add on				48°	

Off On

Fourth Pole Add-on

Table 8.32: General Specifications—Fourth Pole Add-on

IEC ampere ratings	16–125 A
Available versions	DIN rail mounting Door mounting Simultaneous closing with switch poles Early-make closing with respect to switch poles
Size	Compact and modular

Table 8.33: Selection—Fourth Pole Add-on

Catalog number	IEC conventional free air thermal current Ith AC21A (≤690V) (A)	IEC rated operational current Ie AC22A (≤690V), AC23A (≤415V) (A)
Simultaneous closing operation with respect to switch poles		
DIN Rail Mounting (VLS3P***R•)		
VLS1P040R1S [4]	40	40
VLS1P063R1S [5]	63	45
VLS1P063R2S	63	63
VLS1P080R2S	80	80
VLS1P100R2S	100	100
VLS1P125R2S	125	125
Door Mounting (VLS3P***D•)		
VLS1P040D1S [6]	40	40
VLS1P063D2S	63	63
VLS1P080D2S	80	80
VLS1P100D2S	100	100
VLS1P125D2S	125	125
Early-make closing operation with respect to switch poles		
DIN Rail Mounting (VLS3P***R•)		
VLS1P040R1E [4]	40	40
VLS1P063R1E [6]	63	45
VLS1P125R2E [7]	125	125
Door Mounting (VLS3P***D•)		
VLS1P040D1E [6]	40	40
VLS1P125D2E [8]	125	125

NOTE: For Fourth Pole UL / CSA ratings, see page 8-10—they are the same as the ratings for the corresponding single-phase contact switch.

Table 8.34: Certifications and Compliance for Fourth Pole Add-on Blocks (• = certification obtained)

Catalog number	Certification Standard		IEC/EN 60947-1, IEC/EN 60947-3
	cULus per UL 60947-4-1 / CSA C22.2 n° 60947-4-1-14 / UL Listed (File E487906)	cULus per UL 98 / CSA C22.2 n° 4 / UL Listed (File E487907)	
VLS1P040R1E, VLS1P040R1S	•	—	Compliant
VLS1P063R1E, VLS1P063R1S	•	—	
VLS1P040D1E, VLS1P040D1S	•	—	
VLS1P125R2E, VLS1P125D2E	—	•	
VLS1P063R2S–VLS1P125R2S	—	•	
VLS1P063D2S–VLS1P125D2S	—	•	

[4] For VLS3P016R1–040R1 only.
 [5] For VLS3P063R1 only.
 [6] For VLS3P016D1–040D1 only.
 [7] For VLS3P063R2–125R2 only.
 [8] For VLS3P063D2–125D2 only.



VLSA11RS



VLSA11DS



VLSA10R1E
VLSA10R2E



VLS1NR•
VLS1GR•



VLS1ND•
VLS1GD•



VLS8C•
VLS8M•

Add-on Blocks

Table 8.35: Operational Specifications

Auxiliary contacts		
IEC conventional free air thermal current (Ith)		10 A
UL/CSA and IEC/EN 60947-5-1 designation		A600-Q600
Tightening torque		0.8 N•m (7.1 lb-in.)
Other devices		
Tightening torque	VLS1NR1/D1, VLS1GR1/D1 terminals	1.8–2 N•m (16–18 lb-in)
	VLS1NR2/D2, VLS1GR2/D2 terminals	5–6 N•m (45–54 lb-in)
	VLS8C1/C2, VLS8M1/M2	mounting: 0.5 N•m (4.4 lb-in) extension with handle: 0.8 N•m (7.1 lb-in)

Table 8.36: Selection—Add-on Blocks

Catalog number	Specifications
Auxiliary contacts, simultaneous operation with respect to switch poles	
VLSA11RS	1NO+1NC for VLS3P***R• and VLS3P063R1
VLSA11DS	1NO+1NC for VLS3P***D•
Auxiliary contacts, early-break operation with respect to switch poles	
VLSA10R1E	1EB (NO) for VLS3P016R1–VLS3P040R1, VLS3P063R1
VLSA10R2E	1EB (NO) for VLS3P063R2–VLS3P125R2
Neutral terminal	
VLS1NR1	For VLS3P016R1–VLS3P040R1, VLS3P063R1
VLS1NR2	For VLS3P063R2–VLS3P125R2
VLS1ND1	For VLS3P016D1–VLS3P040D1
VLS1ND2	For VLS3P063D2–VLS3P125D2
Earth/Ground terminal	
VLS1GR1	For VLS3P016R1–VLS3P040R1, VLS3P063R1
VLS1GR2	For VLS3P063R2–VLS3P125R2
VLS1GD1	For VLS3P016D1–VLS3P040D1
VLS1GD2	For VLS3P063D2–VLS3P125D2
Mechanical interlock for line changeover (I-0-II)	
VLS8C1	For VLS3P016R1–VLS3P040R1, VLS3P063R1, and VLSH2S5BC: □ 5 mm (0.2 in.) [9]
VLS8C2	For VLS3P063R2–VLS3P125R2 and VLSH2S5BC: □ 5 mm (0.2 in.) [9]
Mechanical coupling system for 6–8 pole disconnect switches	
VLS8M1	For VLS3P016R1–VLS3P040R1 and VLS3P063R1: □ 5 mm (0.2 in.) [9]
VLS8M2	For VLS3P063R2–VLS3P125R2: □ 7 mm (0.3 in.) [10]

Strokes of VLS poles (switch with auxiliary contact blocks)

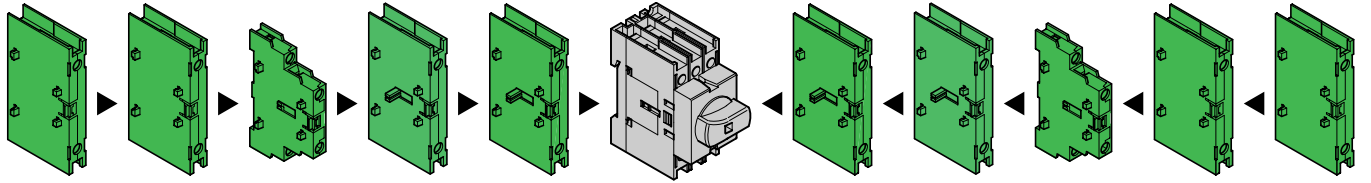
	Travel 0 → 1	0°	30°	60°	90°
VLS3P016R1/D1, VLS3P040R1/D1, VLS3P063R1 Main poles				60°	
VLSA11RS/DS Auxiliary contacts (1 NO + 1 NC)				60°	
	NO				
	NC				
VLSA10R1E Auxiliary contact (1EB – NO early break)			40°		
	Travel 0 → 1		60°		
	Travel 1 → 0		70°		
VLS3P063R2/D2...VLS3P125R2/D2 Main poles				55°	
VLSA11RS/DS Auxiliary contacts (1 NO + 1 NC)				45°	
	NO				
	NC				
			25°		
VLSA10R2E Auxiliary contact (1EB – NO early break)				55°	
	Travel 0 → 1			65°	
	Travel 1 → 0				
		Off			On

[9] Use VLSS shaft extensions.

[10] Use VLSH3S7RD handles and VLSS***7 extensions for a rear-mounting version.

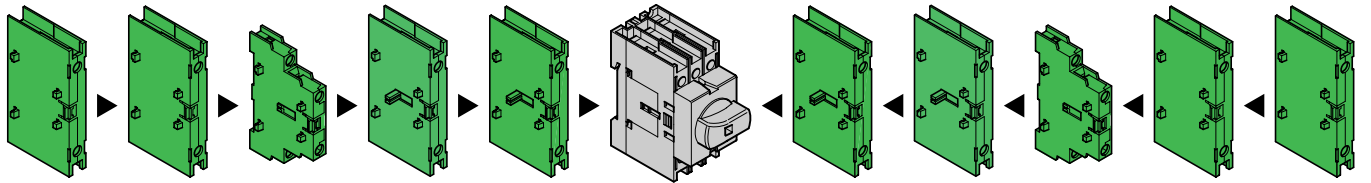
**Sequence and Maximum Combination of Add-on Blocks
DIN Rail Mounting Disconnect Switches**

Table 8.37: VLS3P016R1–VLS3P040R1 (DIN Rail Mounting)



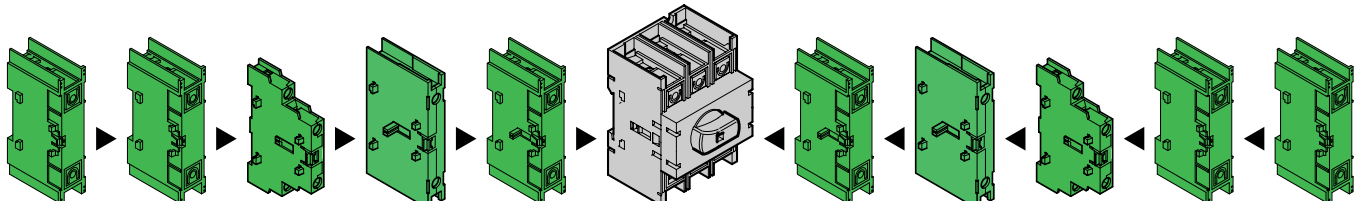
VLS1NR1	VLS1GR1	VLSA11RS	VLSA10R1E	VLS1P040R1E VLS1P040R1S	VLS3P016R1 VLS3P025R1 VLS3P032R1 VLS3P040R1	VLS1P040R1E VLS1P040R1S	VLSA10R1E	VLSA11RS	VLS1GR1	VLS1NR1	
1	1	1	—	1		—	—	2	1	1	
1	1	2	—	—		—	—	1	1	1	1
1	1	1	—	1		—	—	1	1	1	1
1	1	1	1	—		—	—	1	1	1	1
1	1	1	1	—		—	—	—	2	1	1
1	1	2	—	—		—	—	1	1	1	1
1	1	2	—	—		—	—	—	2	1	1
1	1	—	—	—		—	—	—	—	1	1
1	1	—	—	1		—	—	—	—	1	1
1	1	—	—	—		—	—	—	—	1	1
1	1	—	—	—		—	—	—	—	1	1
1	1	—	—	—		—	—	—	—	1	1

Table 8.38: VLS3P063R1 (DIN Rail Mounting)



VLS1NR1	VLS1GR1	VLSA11RS	VLSA10R1E	VLS1P063R1E VLS1P063R1S	VLS3P063R1	VLS1P063R1E VLS1P063R1S	VLSA10R1E	VLSA11RS	VLS1GR1	VLS1NR1	
1	1	1	—	1		—	—	2	1	1	
1	1	2	—	—		—	—	1	1	1	1
1	1	1	—	—		—	—	1	1	1	1
1	1	1	1	—		—	—	—	1	1	1
1	1	1	1	—		—	—	—	2	1	1
1	1	2	—	—		—	—	1	1	1	1
1	1	2	—	—		—	—	—	2	1	1
1	1	—	—	—		—	—	—	—	1	1
1	1	—	—	1		—	—	—	—	1	1
1	1	—	—	—		—	—	—	—	1	1
1	1	—	—	—		—	—	—	—	1	1
1	1	—	—	—		—	—	—	—	1	1

Table 8.39: VLS3P063R2–VLS3P125R2 (DIN Rail Mounting)



VLS1NR2	VLS1GR2	VLSA11RS	VLSA10R2E	VLS1P125R2E VLS1P***R•S	VLS3P063R2 VLS3P080R2 VLS3P100R2 VLS3P125R2	VLS1P125R2E VLS1P***R•S	VLSA10R2E	VLSA11RS	VLS1GR2	VLS1NR2	
—	—	1	—	1		—	—	2	—	—	
—	—	2	—	—		—	—	—	1	—	—
—	—	1	—	1		—	—	1	1	—	—
—	—	1	1	—		—	—	—	1	—	—
—	—	1	1	—		—	—	—	2	—	—
—	—	2	—	—		—	—	1	1	—	—
—	—	2	—	—		—	—	—	2	—	—
1	1	—	—	—		—	—	—	—	1	1
1	1	—	—	1		—	—	—	—	1	1
1	1	—	—	—		—	—	—	—	1	1
1	1	—	—	—		—	—	—	—	1	1
1	1	—	—	—		—	—	—	—	1	1

Door Mounting Disconnect Switches

Table 8.40: VLS3P016D1–VLS3P040D1 (Door Mounting)

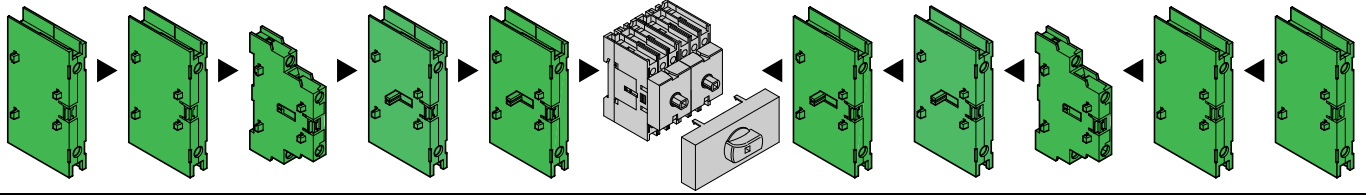
VLS1ND1	VLS1GD1	VLSA11DS	VLS1P040D1E VLS1P040D1S	VLS3P016D1 VLS3P025D1 VLS3P032D1 VLS3P040D1	VLS1P040D1E VLS1P040D1S	VLSA11DS	VLS1GD1	VLS1ND1
1	1	1	1					1
1	1	1	—		1	1	1	1
1	1	—	1		—	1	1	1
1	1	1	—		1	—	1	1
1	1	1	—		—	1	1	1
1	1	—	—		—	—	1	1

Table 8.41: VLS3P063D2–VLS3P125D2 (Door Mounting)

VLS1ND2	VLS1GD2	VLSA11DS	VLS1P125D2E VLS1P125D2S	VLS3P063D2 VLS3P080D2 VLS3P100D2 VLS3P125D2	VLS1P125D2E VLS1P125D2S	VLSA11DS	VLS1GD2	VLS1ND2
—	—	1	1		—	1	—	—
—	—	1	—		1	—	—	—
1	1	—	1		—	1	—	—
—	—	1	—		1	—	1	1
—	—	1	—		—	1	—	—
1	1	—	—		—	—	1	1

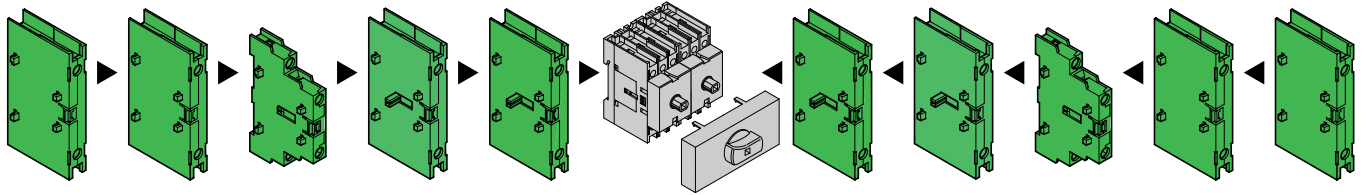
Mechanical Coupling and Mechanical Interlock for Line Changeover

Table 8.42: VLS3P016R1–VLS3P040R1, VLS8C1–VLS8M1 (Rear Mounting)



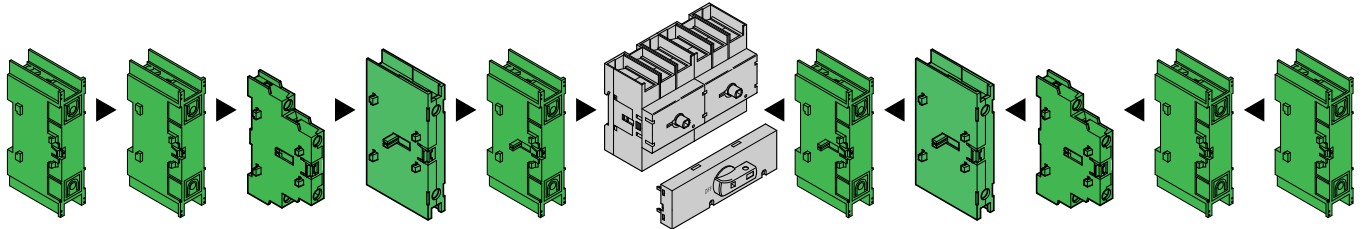
VLS1NR1	VLS1GR1	VLSA11RS	VLSA10R1E	VLS1P040R1E VLS1P040R1S	VLS8C1–VLS8M1	VLS1P040R1E VLS1P040R1S	VLSA10R1E	VLSA11RS	VLS1GR1	VLS1NR1
1	1	1	—	1	VLS3P016R1 + VLS3P016R1	1	—	1	1	1
1	1	1	—	1	VLS3P025R1 + VLS3P025R1	—	—	2	1	1
1	1	2	—	—	VLS3P025R1 + VLS3P025R1	1	—	1	1	1
1	1	1	—	1	VLS3P032R1 + VLS3P032R1	—	1	1	1	1
1	1	1	1	—	VLS3P032R1 + VLS3P032R1	1	—	1	1	1
1	1	1	1	—	VLS3P040R1 + VLS3P040R1	—	—	2	1	1
1	1	2	—	—		—	1	1	1	1
1	1	2	—	—		—	—	2	1	1
1	1	—	—	1		1	—	—	1	1
1	1	—	—	—		—	—	—	1	1
1	1	—	—	—		—	—	—	1	1

Table 8.43: VLS3P063R1 + VLS8C1–VLS8M1 (Rear Mounting)



VLS1NR1	VLS1GR1	VLSA11RS	VLSA10R1E	VLS1P063R1E VLS1P063R1S	VLS8C1– VLS8M1	VLS1P063R1E VLS1P063R1S	VLSA10R1E	VLSA11RS	VLS1GR1	VLS1NR1
1	1	1	—	1	VLS3P063R1 + VLS3P063R1	1	—	1	1	1
1	1	1	—	1		—	—	2	1	1
1	1	2	—	—		1	—	1	1	1
1	1	1	—	1		—	1	1	1	1
1	1	1	1	—		1	—	1	1	1
1	1	1	1	—		—	—	2	1	1
1	1	2	—	—		—	1	1	1	1
1	1	2	—	—		—	—	2	1	1
1	1	—	—	1		1	—	—	1	1
1	1	—	—	—		—	—	—	1	1

Table 8.44: VLS3P063R2–VLS3P125R2 + VLS8C2–VLS8M2 (Rear Mounting)



VLS1NR2	VLS1GR2	VLSA11RS	VLSA10R2E	VLS1P125R2E VLS1P***R•S	VLS8C2–VLS8M2	VLS1P125R2E VLS1P***R•S	VLSA10R2E	VLSA11RS	VLS1GR2	VLS1NR2
—	—	1	—	1	VLS3P063R2 + VLS3P063R2	1	—	1	—	—
—	—	1	—	1	VLS3P063R2 + VLS3P063R2	—	—	2	—	—
—	—	2	—	—	VLS3P080R2 + VLS3P080R2	1	—	1	—	—
—	—	1	—	1	VLS3P100R2 + VLS3P100R2	—	1	1	—	—
—	—	1	1	—	VLS3P100R2 + VLS3P100R2	1	—	1	—	—
—	—	1	1	—	VLS3P125R2 + VLS3P125R2	—	—	2	—	—
—	—	2	—	—		—	1	1	—	—
—	—	2	—	—		—	—	2	—	—
1	1	—	—	1		1	—	—	1	1
1	1	—	—	—		—	—	—	1	1



VLSH1S5R (65 x 65 mm)



VLSH2S5R (65 x 65 mm)



VLSH3S7RD (75 mm dia.)



VLSH4S5R (48 x 48 mm)

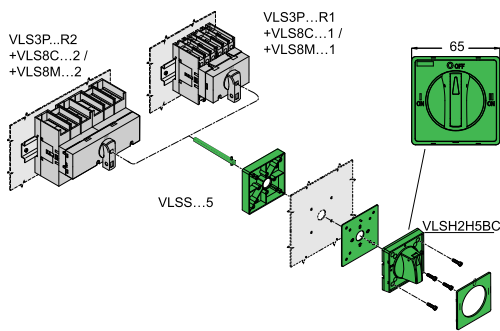


Figure 8.1: Transformation of the DIN rail mounting version into the rear mounting version

Rotary Handles

Table 8.45: Selection—Rotary Handles (NEMA 1, 12, 3R, 4, and 4X. IEC IP65 unless otherwise specified)

Catalog number	Specifications
Door Mounting and Rear Mounting Handles, Padlock-ready ^[11]	
Red/yellow, rotating	
VLSH1S5R	For VLS3P***R and VLS3P***D. Screw mounting. Recessed selector. □ 5 mm (0.2 in.) ^[12] .
VLSH2S5R	For VLS3P***R and VLS3P***D. Screw mounting. Protruding selector. □ 5 mm (0.2 in.) ^[12] .
VLSH2H5R	For VLS3P***R and VLS3P016D1–VLS3P040D1. Ring mounting. Protruding selector. □ 5 mm (0.2 in.) ^{[12] [13]} .
VLSH2H5RD	For VLS3P***R. Ring mounting. Protruding selector with release, defeatable per UL60947-4-1; □ 5 mm (0.2 in.) ^[12] .
VLSH3S7RD	For VLS3P063R2–VLS3P125R2, and VLS8M2. Screw mounting. Pistol grip with release, defeatable per 60947-4-1; □ 7 mm (0.3 in.). IEC IP66. ^[14]
VLSH4S5R	For For VLS3P***R and VLS3P***D. Screw mounting. Protruding selector. 48 mm square. □ 5 mm (0.2 in.) ^[12] .
Black, rotating	
VLSH1S5B	For VLS3P***R and VLS3P***D. Screw mounting. Recessed selector. □ 5 mm (0.2 in.) ^[12] .
VLSH2S5B	For VLS3P***R and VLS3P***D. Screw mounting. Protruding selector. □ 5 mm (0.2 in.) ^[12] .
VLSH2H5B	For VLS3P***R, VLS3P063R1, VLS3P016D1–VLS3P040D1. Ring mounting. Protruding selector. □ 5 mm (0.2 in.) ^{[12] [13]} .
VLSH2H5BD	For VLS3P***R. Ring mounting. Protruding selector with release, defeatable per 60947-4-1. □ 5 mm (0.2 in.) ^[12] .
VLSH3S7BD	For VLS3P063R2–VLS3P125R2, and VLS8M2. Screw mounting. Pistol grip with release, defeatable per UL60947-4-1; □ 7 mm (0.3 in.). ^[14]
VLSH2S5BC	For VLS8C mechanical interlock mechanism (I-O-II). □ 5 mm (0.2 in.) ^[12] .
VLSH4S5B	For For VLS3P***R and VLS3P***D. Screw mounting. Protruding selector. □ 5 mm (0.2 in.) ^[12] .
Accessories for Rear Mounting Control For VLSH3S7RD and VLSH3S7BD handles.	
VLSHA7	Adapter, □ 7 mm (0.3 in.) for VLS3P063R2–VLS3P125R2.



VLSH2H5B (65 x 65 mm)



VLSH2S5BC (65 x 65 mm)



VLSH4S5B (48 x 48 mm)



VLSHA7

Table 8.46: Certifications and Compliance (● = certification obtained)

Catalog number	cULus per UL60947-4-1 / CSA C22.2 n° 60947-4-1-14 UL Listed (File E487906)	cULus per UL98 / CSA C22.2 n° 4 UL Listed (File E487907)
VLSA11RS/DS	—	—
VLSA10R1E	UL Listed, cULus File E478582	—
VLSA10R2E	CSA C22.2 n° 14-10	—
VLS1NR1/D1	●	—
VLS1NR2/D2	—	●
VLS1GR1/D1	●	—
VLS1GR2/D2	—	●
VLS8C1/M1	●	—
VLS8C2/M2	—	●
VLSH1S5R/B	●	●
VLSH2S5R/B	●	●
VLSH2H5R/B	●	●
VLSH4S5R/B	●	●
VLSH2S5RD/BD	●	●
VLSH3S7RD/BD	—	●
VLSH2H5BC	●	●
VLSHA7	—	●

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-3, IEC/EN 60947-5-1, UL 60947-4-1, UL 98, CSA C22.2.

[11] Catalog numbers ending in BD or RD are for rear mounting units only.

[12] For VLS3P***R disconnect switches, separately purchase VLSS shaft extensions.

[13] Snap-on mounting of VLS3P016–VLS3P040D1 disconnect switches with the handle.

[14] Separately purchase the VLSS***7 shaft extension and a VLSHA7 handle having a 7 mm (0.3 in.) square section—not required for VLS8M2.

Table 8.47: Operating Specifications

Handle mounting		ring or screw
Mounting handle interaxis (compatible with the pre-existing drillings of the most common types in the marketplace)	VLSH1S5R/B VLSH2S5R/B VLSH2S5BC	36 x 36 mm (1.4 x 1.4 in.) or 48 x 48 mm (1.9 x 1.9 in.)
	VLSH3S7RD/BD	36 x 36 mm (1.4 x 1.4 in.)
		1–3 for all handles Ø4–8 mm (Ø0.2–0.3 in.)
Padlocks	Mounting ring types	2.3 N•m (20.4 lb-in)
Tightening torque	VLS8M1	0.8 N•m (7 lb-in)
	VLSH3S7RD/BD	1.5 N•m (13.3 lb-in)
	All others	1 N•m (9 lb-in)
Degree of protection	IEC / EN: IP65 for all except VLSH3S7RD/BD, which are IP66. UL / CSA: VLSH1S5R/B and VLSH3S7RD/BD are Type 1, 12, 3R, 4, and 4X outdoor use with all VLS switch models. VLSH2S5R/B, VLSH2H5R/B, VLSH2H5RD/BD and VLSH2S5BC are Types 1, 12, 3R, 4, and 4X outdoor use with VLS3P016R1/D1–VLS3P040R1/D1 and VLS3P063R1 models, otherwise Type 1 only.	

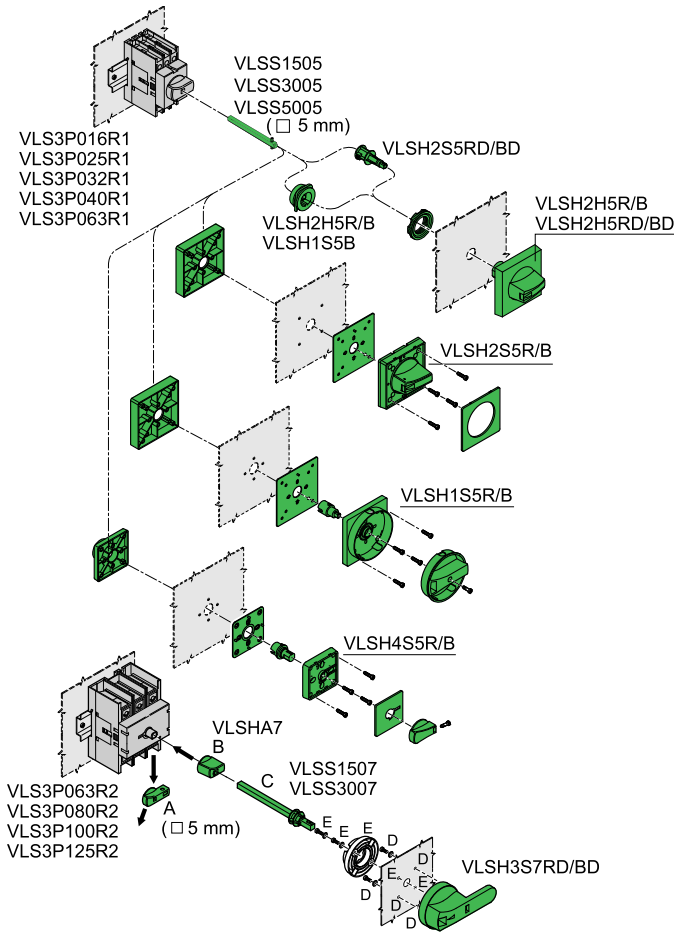


Figure 8.2: Changing the DIN rail mounting version for rear mounting

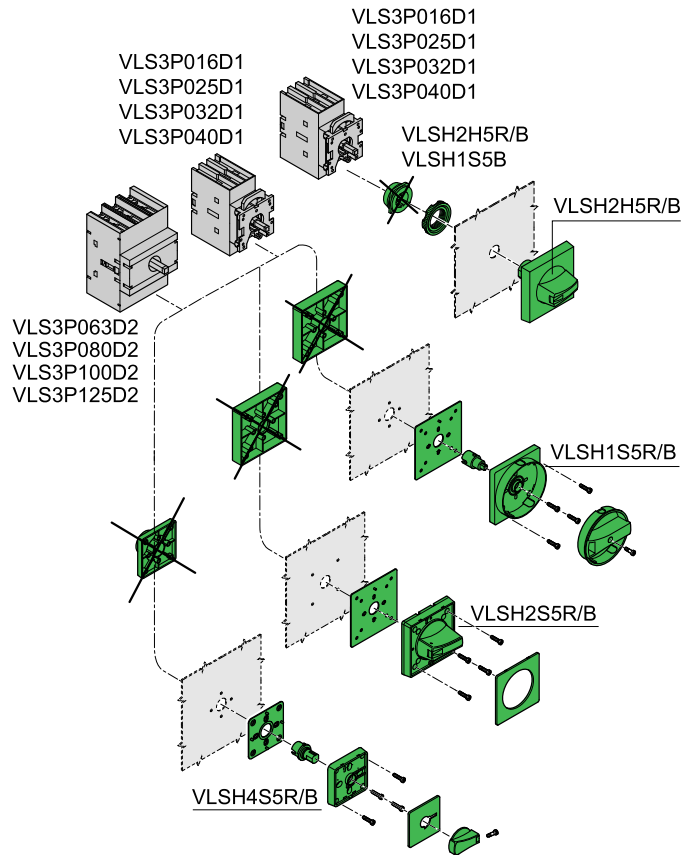


Figure 8.3: Door mounting version
Certifications and Compliance:
See Table 8.46 for details.



Shaft Extensions, Terminal Covers, Fuse Holders, and Fuse Blocks

Table 8.48: Selection—Shaft Extensions, Terminal Covers, Fuse Holders, and Fuse Blocks

Catalog number	Specifications	Qty per package	Weight, kg (lb)
Shaft extension for rear-mounting handles VLSH1S5R–VLSH2H5RD, VLSH1S5B–VLSH2H5BD, VLSH2H5BC; interlocking changeover type VLS8C1, VLS8C2; and mechanical disconnect switch system VLS8M1			
VLSS1505	150 mm long; □ 5 mm (0.2 in.)	1	0.032 (0.07)
VLSS3005	300 mm long; □ 5 mm (0.2 in.)	1	0.068 (0.15)
VLSS5005	500 mm long; □ 5 mm (0.2 in.)	1	0.090 (0.20)
Shaft extension for rear-mounting handles VLSH3S7RD/BD, and mechanical coupling system VLS8M2			
VLSS1507	150 mm long; □ 7 mm (0.3 in.)	1	0.090 (0.20)
VLSS3007	300 mm long; □ 7 mm (0.3 in.)	1	0.160 (0.35)
Set of 2 one-pole terminal covers for fourth pole			
VLSC1P1	For VLS1P040R1S, VLS1P040D1S, VLS1P040R1E, VLS1P040D1E, VLS1P063R1E, VLS1P063R1S	1	0.009 (0.02)
VLSC1P2	For VLS1P063R2S–VLS1P125R2S, VLS1P063D2S–VLS1P125D2S, VLS1P125R2E, VLS1P125D2E	1	0.012 (0.03)
Set of 2 three-pole terminal covers			
VLSC3P1	For VLS3P016R1–VLS3P040R1, VLS3P063R1, VLS3P016D1–VLS3P040D1	1	0.018 (0.04)
VLSC3P2	For VLS3P063R2–VLS3P125R2, VLS3P063D2–VLS3P125D2	1	0.030 (0.07)
Fuse holder/block for disconnect switches			
VLSFH1UL	For VLS3P016R1–VLS3P032R1 (suitable for Class CC fuses)	1	0.135 (0.30)

Table 8.49: Operational Specifications of Fuse Holder

IEC rated insulation voltage, U _i	1000 V
IEC rated impulse withstand voltage, U _{imp}	8 kV

- The fuse holder/block connects directly to the disconnect switches.
- Access to fuses only when the disconnect switches are in Off position.

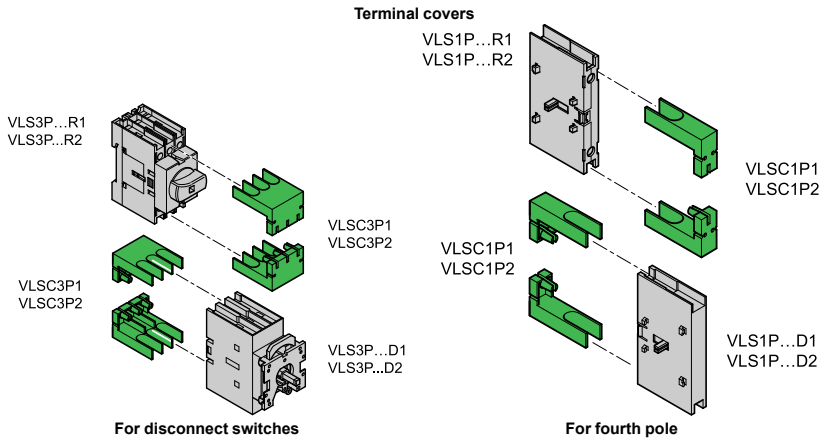
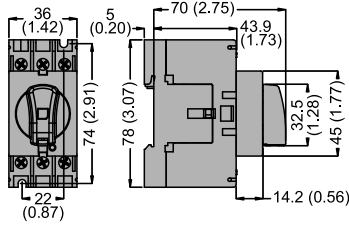


Table 8.50: Certifications and Compliance (● = certification obtained)

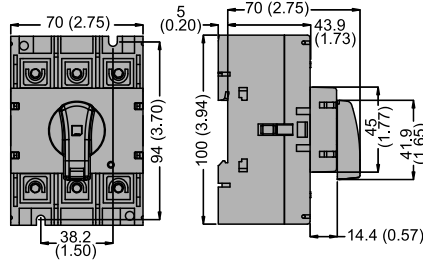
Catalog number	cULus per UL60947-4-1 / CSA C22.2 n° 60947-4-1-14 UL Listed (File E487906)	cULus per UL98 / CSA C22.2 n° 4 UL Listed (File E487907)
VLSS1505, VLSS3005, VLSS5005	●	—
VLSS1507, VLSS3007	●	—
VLSC1P1, VLSC3P1	—	—
VLSC1P2, VLSC3P2	—	—
VLSFH1UL	●	—

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-3, UL60947-4-1, UL98, CSA C22.2.

Table 8.51: DIN Rail Mounting Disconnect Switches
VLS3P016R1–VLS3P040R1, VLS3P063R1

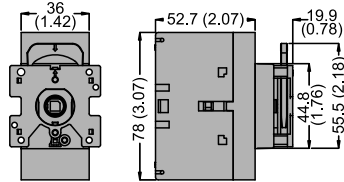


VLS3P063R2–VLS3P125R2

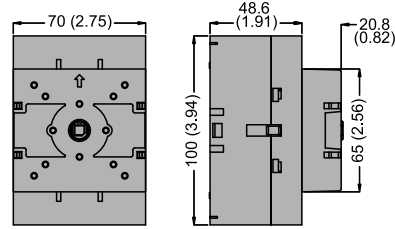


Dim. = mm (in.)

Table 8.52: Door Mounting Disconnect Switches
VLS3P016D1–VLS3P040D1



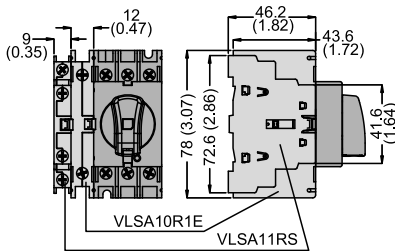
VLS3P063D2–VLS3P125D2



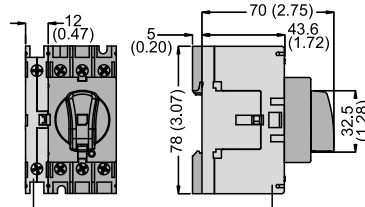
Dim. = mm (in.)

Table 8.53: Add-on Blocks and Accessories
For VLS3P016R1–VLS3P040R1, VLS3P063R1

Auxiliary contacts
VLSA11RS, VLSA10R1E



Fourth pole
VLS1P040R1E/R1S, VLS1P063R1E/R1S
VLS1NR1 neutral, VLS1GR1 ground terminals

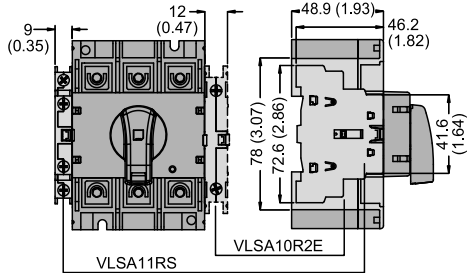


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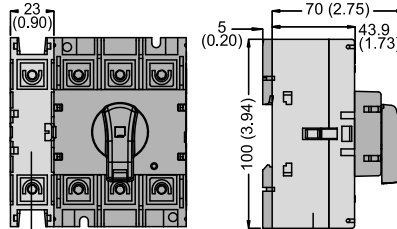
VLS3P016R1, VLS3P025R1, VLS3P032R1,
VLS3P040R1, VLS3P063R1, VLSA11RS

For VLS3P063R2–VLS3P125R2

Auxiliary contacts
VLSA11RS
VLSA10R2E



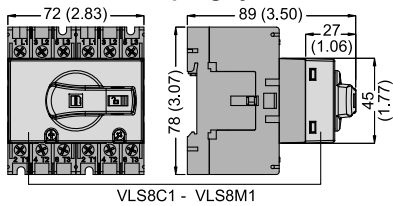
Fourth pole
VLS1P125R2E, VLS1P063R2S–VLS1P125R2S
VLS1NR2 neutral, VLS1GR2 ground terminals



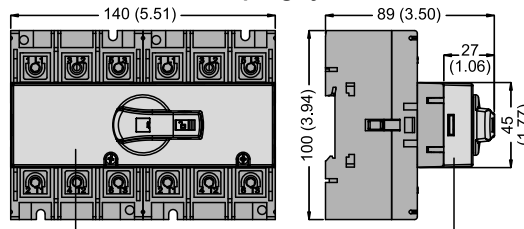
Dim. = mm (in.)

VLS3P063R2, VLS3P080R2, VLS3P100R2, VLS3P125R2,
VLSA10R1E, VLSA10R2E, VLS1P063R2S, VLS1P080R2S,
VLS1P100R2S, VLS1P125R2S, VLS1P125R2

Mechanical interlock VLS8C1 and mechanical coupling system VLS8M1



Mechanical interlock VLS8C2 and mechanical coupling system VLS8M2

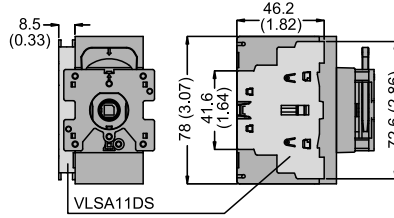


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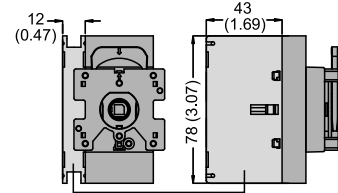
VLS8C2 - VLS8M2

For VLS3P016D1–VLS3P040D1

Auxiliary contacts
VLSA11DS



Fourth pole
VLS1P040D1E–VLS1P040D1S
VLS1ND1 neutral, VLS1GD1 ground terminals

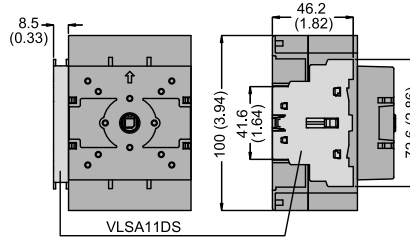


VLS3P016D1, VLS3P025D1, VLS3P032D1, VLS3P040D1, VLS1P040D1S, VLS1P040D1E

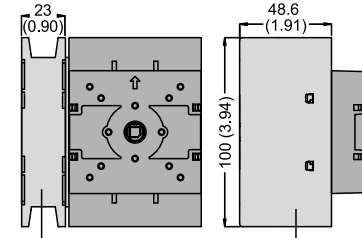
Dim. = mm (in.)

For VLS3P063D2–VLS3P125D2

Auxiliary contacts
VLSA11DS



Fourth pole
VLS1P125D2E, VLS1P063D2S–125D2S
VLS1ND2 neutral, VLS1GD2 ground terminals

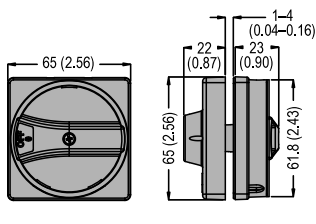


VLS1P063D2S, VLS1P080D2S, VLS1P100D2S, VLS1P125D2S, VLS1P125D2E, VLS1ND1, VLS1ND2, VLS1GD1, VLS1GD2

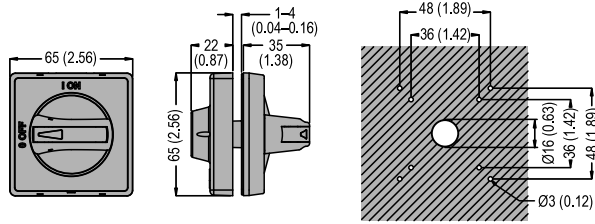
Dim. = mm (in.)

Table 8.54: Rotary handles

VLSH1S5R/B

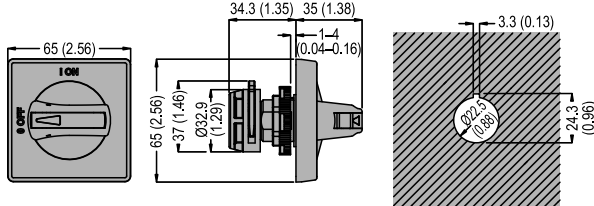


VLSH2S5R/B

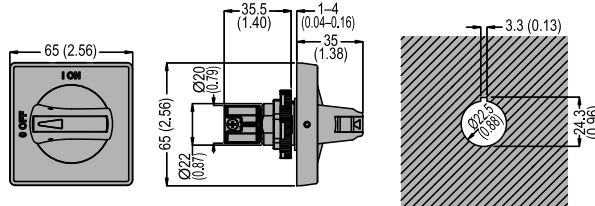


Dim. = mm (in.)

VLSH2H5R/B

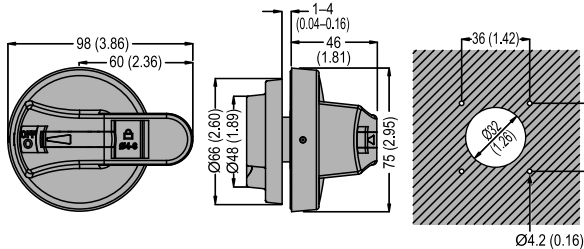


VLSH2H5RD/BD

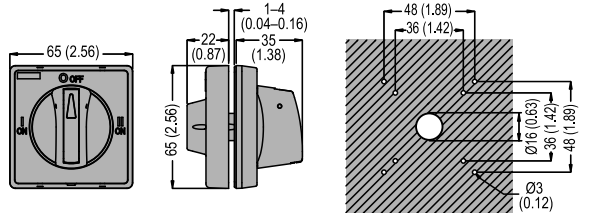


Dim. = mm (in.)

VLSH3S7RD/BD

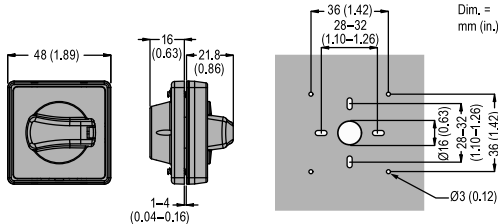


VLSH2S5BC



Dim. = mm (in.)

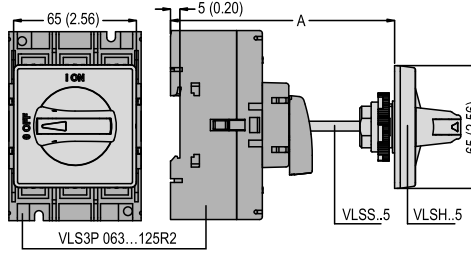
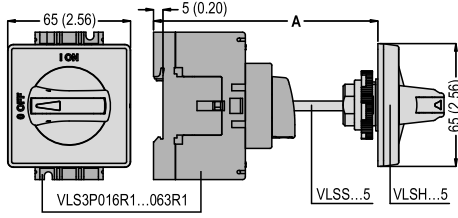
VLSH4S5R/B



Dim. = mm (in.)

Shaft extensions for rear-mounting handles (for Dimension A, see Table 8.55)

VLSS

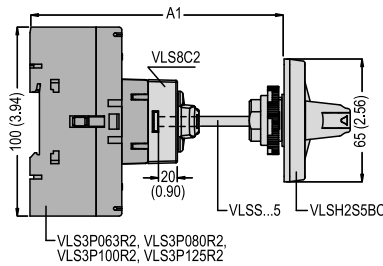
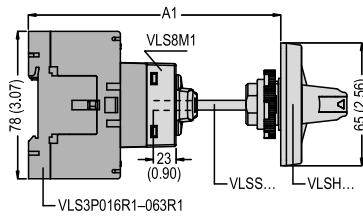


Dim. =
mm (in.)

Table 8.55: Dimension A for VLSS Shaft Extensions

Extension	Length mm (in.)	Maximum Dimension A, mm (in.)				
		Type of handle				
		VLSS 1S5*	VLSS 2S5*	VLSS 2H5R	VLSS 2H5RD	VLSS 2S5BC
VLSS1505	150 (5.90)	194 (7.64)	192 (7.56)	197 (7.75)	211 (8.31)	192 (7.56)
VLSS3005	300 (11.81)	344 (13.54)	342 (13.46)	347 (13.66)	361 (14.21)	342 (13.46)
VLSS5005	500 (19.68)	544 (21.42)	542 (21.34)	547 (21.53)	561 (22.09)	542 (21.34)

VLSS used with VLS8C1, VLS8C2, and VLS8M1

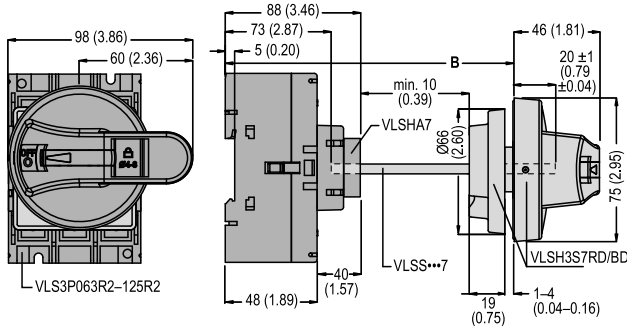


Dim. =
mm (in.)

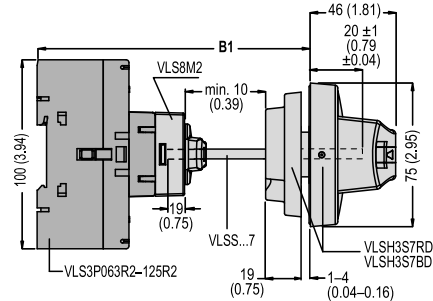
Table 8.56: Dimension A1 for VLSS used with VLS8C1, VLS8C2, and VLS8M1

Extension (5 mm)	Length mm (in.)	A1 maximum, mm (in.)				
		Used with VLS8M1				
		Type of handle				
		VLSS1S5*	VLSS2S5*	VLSS2H5R	VLSS2H5RD	VLSS2S5BC
VLSS1505	150 (5.90)	211 (8.31)	209 (8.23)	214 (8.42)	228 (8.98)	209 (8.23)
VLSS3005	300 (11.81)	361 (14.21)	359 (14.13)	364 (14.33)	378 (14.88)	359 (14.13)
VLSS5005	500 (19.68)	561 (22.09)	559 (22.01)	564 (22.20)	578 (22.75)	559 (22.01)

VLSS...7 used with VLSHA7 and VLSH3S7RD/BD



VLSS...7 used with VLS8M2 and VLSH3S7RD/BD handle

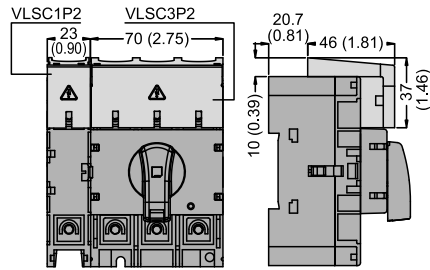
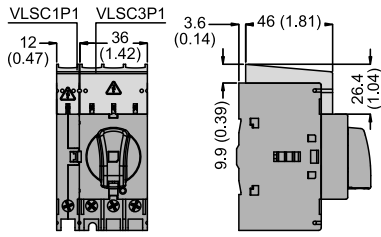


Dim. =
mm (in.)

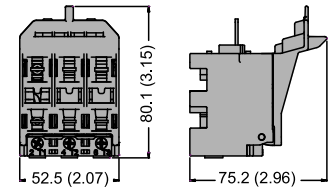
Extension (7 mm)	Length mm (in.)	B	
		with VLSS3S7RD/BD handle	B1
		mm (in.)	mm (in.)
VLSS1507	176 (6.93)	118–229 (4.64–9.01)	119–205 (4.68–8.07)
VLSS2007	226 (8.90)	118–279 (4.64–10.99)	119–255 (4.68–10.03)
VLSS3007	326 (12.83)	118–379 (4.64–14.92)	119–355 (4.68–13.98)

Table 8.57: Terminal Cover and Fuse Holder Dimensions

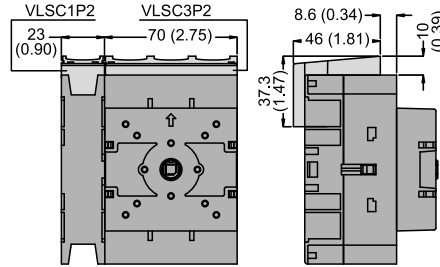
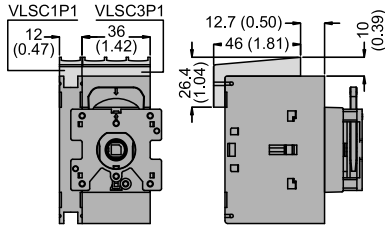
Terminal Cover Dimensions
VLSC1P1, VLSC3P1



Fuse Holder Dimensions
VLSFH1UL



VLSC1P2, VLSC3P2

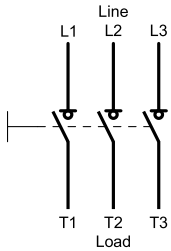


Dim. =
mm (in.)

Table 8.58: Wiring Diagrams—VLS Disconnect Switches (16–125 A)

Three-pole disconnectors

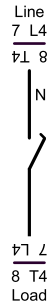
VLS3P016... –
VLS3P125R2/D2



Fourth pole add-on
VLS1P.....S

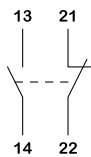


VLS1P.....E

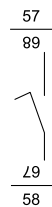


Add-on Blocks and Accessories

Auxiliary contacts
VLSA11-S



VLSA10R1E–VLSA10R2E



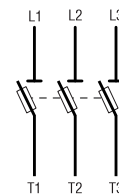
Neutral terminal
VLS1NR1/D1–VLS1NR2/
D2

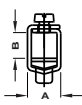


Earth/Ground terminal
VLS1GR1/D1–VLS1GR2/
D2



Fuse holder
VLSFH1

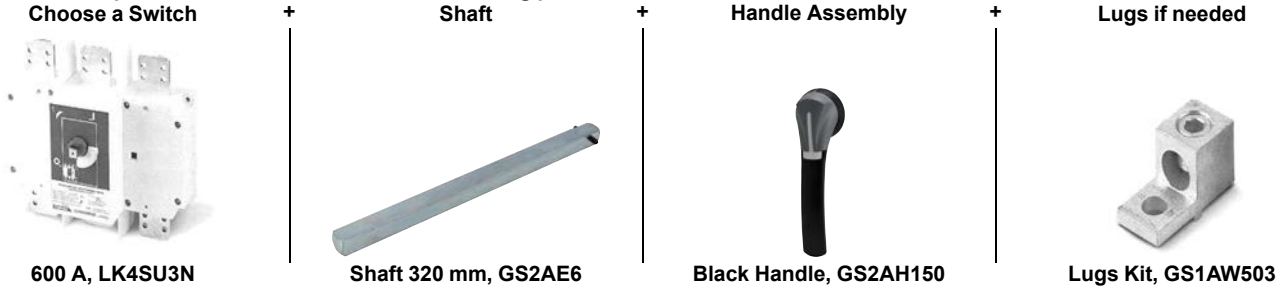


Model	3-pole: VLS3P...		016...	025...	032...	040...	063R1	063R2	080...	100...	125...	
	4th pole: VLS1P...		040...	040...	040...	040...	063R1S	063R2S	080...	100...	125...	
Contact Specifications												
IEC conventional free air thermal current, I _{th} (≤40 °C)		A	16	25	32	40	63	63	80	100	125	
IEC rated insulation voltage, U _i		V	1000									
IEC rated impulse withstand voltage, U _{imp}		kV	8									
IEC rated operational current, I _e												
AC21A	400 V	A	16	25	32	40	63	63	80	100	125	
	500 V	A	16	25	32	40	63	63	80	100	125	
	690 V	A	16	25	32	40	63	63	80	100	125	
AC22A	400 V	A	16	25	32	40	45	63	80	100	125	
	500 V	A	16	25	32	40	45	63	80	100	125	
	690 V	A	16	25	32	40	45	63	80	100	125	
AC23A	400 V	A	16	25	32	40	45	63	80	100	125	
	500 V	A	16	25	25	25	25	63	63	80	100	
	690 V	A	16	25	25	25	25	47	47	47	47	
IEC rated operational power												
AC23A	400 V	kW	7.5	11	15	18.5	22	30	45	55	55	
	690 V	kW	11	22	22	22	22	45	45	45	45	
IEC reactive power for capacitor control 400 V		kvar	7.5	10	12.5	15	15	25	30	40	50	
IEC protection against short-circuit												
Rated short-time withstand current (1 s), I _{cw}		A rms	800						2500			
Rated conditional short-circuit current		kA rms	50									
With fuse class gG		A	16	25	32	40	63	63	80	100	125	
IEC making capacity (AC23A 400 V)		A	400				450	1250				
IEC breaking capacity (AC23A 400 V)		A	320				360	1000				
Mechanical life (depending on the application)		cycles	100,000				100,000	30,000				
Electrical life (IEC AC21A)		cycles	100,000				15,000	30,000				
UL/CSA general use at 600 V		A	16	25	32	40	50	60	100	100	100	
UL/CSA short-circuit rating at 600 V		kA	5	5	5	5	5	50	50	50	50	
UL/CSA fuse class/max rating at 600 V		Type/A	RK5/20	RK5/30	RK5/35	RK5/45	RK5/45	–/100	–/100	–/100	–/100	
UL/CSA Hp ratings												
Single phase	120 V	hp	1	1.5	2	2	2	3	3	5	7.5	
	240 V	hp	2	3	5	5	7.5	7.5	10	10	10	
	200–208 V	hp	5	7.5	10	10	10	20	25	30	25	
Three phase	240 V	hp	5	7.5	10	15	15	20	30	30	30	
	480 V	hp	10	15	20	20	30	40	40	50	50	
	600 V	hp	10	20	20	25	30	40	40	60	40	
Terminals												
	Type	Lug clamp IEC/EN 60947-1 designation: Pillar terminal.										
	A	5.6 mm (0.22 in.)						12.4 mm (0.49 in.)				
	B	6.5 mm (0.26 in.)						10.4 mm (0.41 in.)				
	Screw	M4						M8				
	Tool	Phillips 2						Metric Allen key 4				
Tightening torque	N•m	1.8–2						5–6				
	lb-in	16–18						45–54				
Conductor section (solid/stranded)	mm ²	0.75–16						4–50				
	AWG	18–6						12–1				
Ambient Conditions												
Temperature	Operating	°C	–25 to +55									
	Storage	°C	–40 to +70									
Maximum altitude		m	3000									
Mounting position	Normal	Vertical										
	Admissible	Any										
Mounting	Screw or 35 mm DIN rail (IEC/EN 60715)											

LK4 and GS2 Disconnect Switches

Table 8.59: Building a Complete GS or LK Switch

To build a complete GS or LK switch, order the following parts:



Example:
LK4SU3N (600 A non-fusible switch) + GS2AE6 (320 mm Style D shaft) + GS2AH150 (black/black, locking)

To add auxiliary contacts:

For front-mounted contacts order LK4AD30N (front-mounted auxiliary contact holder) + GS2AM110.

LK4 Nonfusible Disconnect Switches

NOTE: Switches in the shaded area are now available as Kits. See Table 8.61.

Table 8.60: LK Nonfusible IEC Style Disconnect Switches



100-400 A

Pole	Rating (A)	Catalog No.	Maximum Horsepower Rating				Short Circuit Current Rating 600 Vac		Shaft Style
			240 V	480 V	600 V	250 Vdc	Fuse	SCCR kA	
NOTE: Switches in the shaded area are now available as Kits.									
3	30	LK4DU3CN ^[1]	10	20	30	—	J	100	AL
3	60	LK4GU3CN ^[1]	20	40	50	—	J	100	AL
3	100	LK4JU3CN ^[1]	20	50	50	N/A	J	100	AL
3	100	LK4JU3N	30	75	100	15	J	200	B
3	200	LK4MU3N	75	150	200	15	J	200	B
3	400	LK4QU3N	125	250	350	50	J	200	B
3	600	LK4SU3N	200	400	350	50	J	200	D
3	800	LK4TU3N	200	500	500	—	L	100	D
3	1000	LK4UU3N	200	500	500	—	L	100	D
3	1200	LK4WU3N	200	500	500	—	L	100	D



30-100 A Compact

Table 8.61: ^{New!} Kits for Compact Switches LK4: 30, 60 and 100 A

Rating (A)	Kit Catalog Number	Pieces Included ^[2]				
		Compact Switch	400 mm Shaft	Handle Color / NEMA Rating	Handle	Guide Cone
30 A	LK4DUKB1	LK4DU3CN	LK4AE41CN	Black / NEMA 1, 12, 3R	LK4AH0110CN	GS2AEH12
	LK4DUKB4	LK4DU3CN	LK4AE41CN	Black / NEMA 4, 4X	LK4AH0410CN	GS2AEH12
	LK4DUKR1	LK4DU3CN	LK4AE41CN	Red / NEMA 1, 12, 3R	LK4AH0120CN	GS2AEH12
	LK4DUKR4	LK4DU3CN	LK4AE41CN	Red / NEMA 4, 4X	LK4AH0420CN	GS2AEH12
60 A	LK4GUKB1	LK4GU3CN	LK4AE41CN	Black / NEMA 1, 12, 3R	LK4AH0110CN	GS2AEH12
	LK4GUKB4	LK4GU3CN	LK4AE41CN	Black / NEMA 4, 4X	LK4AH0410CN	GS2AEH12
	LK4GUKR1	LK4GU3CN	LK4AE41CN	Red / NEMA 1, 12, 3R	LK4AH0120CN	GS2AEH12
	LK4GUKR4	LK4GU3CN	LK4AE41CN	Red / NEMA 4, 4X	LK4AH0420CN	GS2AEH12
100 A	LK4JUKB1	LK4JU3CN	LK4AE41CN	Black / NEMA 1, 12, 3R	LK4AH0110CN	GS2AEH12
	LK4JUKB4	LK4JU3CN	LK4AE41CN	Black / NEMA 4, 4X	LK4AH0410CN	GS2AEH12
	LK4JUKR1	LK4JU3CN	LK4AE41CN	Red / NEMA 1, 12, 3R	LK4AH0120CN	GS2AEH12
	LK4JUKR4	LK4JU3CN	LK4AE41CN	Red / NEMA 4, 4X	LK4AH0420CN	GS2AEH12

[1] No longer sold as components. Purchase Kits containing Switch, Handle, Shaft, and Guide Cone as listed in Table 8.61.

[2] Components are NOT sold separately. Only 400 mm shaft can be purchase separately.



GS2AH130



GS2AH150



GS2AH170

NOTE: Switches in the shaded area are now available as Kits. See Table 8.61.

Table 8.62: Handles and Shafts for LK Switches

Rating (A)	Handle			Shaft			Guide Cone ^[3]	Shaft Style	Support Bracket Catalog No.
	Catalog No.	Type	Color	12.6 in. / 320 mm	15.7 in. / 400 mm	19.6 in. / 500 mm			
30–100	LK4AH110CN ^[4]	1, 3R, 12	Black	LK4AE12CN	—	—	GS2AEH12	AL	—
30–100	LK4AH1120CN ^[4]	1, 3R, 12	Red/Yellow						
30–100	LK4AH410CN ^[4]	4, 4X	Black						
30–100	LK4AH420CN ^[4]	4, 4X	Red/Yellow						
100–400	GS2AH130	1, 3R, 12	Black	GS2AE2	GS2AE21	GS2AE23	GS2AEH12	B	GS2AESB
100–400	GS2AH140	1, 3R, 12	Red						
100–400	GS2AH430	4, 4X	Black						
100–400	GS2AH440	4, 4X	Red/Yellow						
600	GS2AH150	1, 3R, 4, 4X, 12	Black	GS2AE6	GS2AE61	—	GS2AEH12	D	—
600	GS2AH160	1, 3R, 4, 4X, 12	Red/Yellow						
800–1200	GS2AH170	1, 3R, 4, 4X, 12	Black						
800–1200	GS2AH180	1, 3R, 4, 4X, 12	Red/Yellow						

NOTE: Switches in the shaded area are now available as Kits.

Table 8.63: Auxiliary Contacts for LK Switches

Switch Amperes	Catalog No.	Description
30–60	MDSAN11	Aux Contact 1 N.O. and 1 N.C.
30–60	MDSAN20	Aux Contact 2 N.O.
100–400	LK4AD10N	Aux Contact 1 N.O. and 1 N.C.
100–400	LK4AD20N	Aux Contact 2 N.O.
600–1200	LK4AD30N	Aux Contact Holder
600–1200	GS2AM110	Aux Contact 1 N.O.
600–1200	GS2AM101	Aux Contact 1 N.C.

Table 8.64: Terminal Shrouds for LK Switches

Switch Amperes	Catalog No.	Description
30–60	LK4AP3CN	Shroud Top and Bottom, 3-Pole
100–200	LK4AP33TN	Shroud Top LK4, 3-Pole, 100/200 A
100–200	LK4AP33BN	Shroud Bottom LK4, 3-Pole, 100/200 A
400	LK4AP53TN	Shroud Top LK4, 3-Pole, 400 A
400	LK4AP53BN	Shroud Bottom LK4, 3-Pole, 400 A
600 ^[5]	LK4AP63N	Shroud Bottom LK4, 3-Pole, 600 A
800–1200 ^[5]	LK4AP83N	Shroud Bottom LK4, 3-Pole, 800–1200 A

^[3] Optional on shafts for LK4DU3CN, LK4GU3CN and LK4JU3CN.

^[4] No longer sold as components. Purchase Kits containing Switch, Handle, Shaft, and Guide Cone as listed in Table 8.61.

^[5] 600–1200 A standard with top shroud.



GS2GU3N



Auxiliary Contacts
GS1AD10 + GS2AM110



Shorting Links

GS2 Fusible Disconnect Switches

Table 8.65: GS Fusible IEC Style Disconnect Switches

Pole	Rating (A)	Catalog No.	Maximum Horsepower Rating				Short Circuit Current Rating 600 Vac		Shaft Style
			240 V	480 V	600 V	250 Vdc	Fuse	SCCR kA	
3	30	GS1DDU3	7.5	15	20	5	CC	100	AG
3	30	GS1DU3	7.5	15	20	5	J	100	AG
3	30	GS2EEU3	7.5	15	20	5	CC	100	B
3	30	GS2EU3N	7.5	15	20	5	J	100	B
3	60	GS2GU3N	15	30	50	10	J	100	B
3	100	GS2JU3N	30	60	75	20	J	200	B
3	200	GS2MU3N	60	125	150	40	J	200	B
3	400	GS2QU3N	125	250	350	50	J	200	B
3	600	GS2SU3	200	500	500	—	J	200	C
3	800	GS2TU3	200	500	500	—	J	200	C

Table 8.66: Handles and Shafts for GS Switches [6]

Rating (A)	Handle			Shaft: 12.6 in. (320 mm)	Shaft: 15.7 in. (400 mm)	Shaft: 19.7 in. (500 mm)	Shaft Guide	Shaft Style	Support Bracket [7]
	Catalog No.	Type	Color	Catalog No.	Catalog No.	Catalog No.	Catalog No.		
30-60	GS2AH110	1, 3R, 12	Black	GS2AE8	GS2AE81	—	GS2AEH12	AG	—
30-60	GS2AH120	1, 3R, 12	Red/Yellow						
30-60	GS2AH410	4, 4X	Black						
30-60	GS2AH420	4, 4X	Red/Yellow						
30-400	GS2AH130	1, 3R, 12	Black	GS2AE2	GS2AE21	GS2AE23	GS2AEH12	B	GS2AESB
30-400	GS2AH140	1, 3R, 12	Red/Yellow						
30-400	GS2AH430	4, 4X	Black						
30-400	GS2AH440	4, 4X	Red/Yellow						
600-800	GS2AH150	1, 3R, 4, 4X, 12	Black	GS2AE5	GS2AE51	GS2AE53	GS2AEH12	C	—
600-800	GS2AH160	1, 3R, 4, 4X, 12	Red/Yellow						

NOTE: Hole adapter kit for GS1 to GS2 Handles: GS2AH100TO200.

Table 8.67: Auxiliary Contacts for GS Switches [8]

Switch Amperes	Catalog No.	Description
30-800	GS1AM110	Aux Contact 1 N.O.
30-800	GS1AM101	Aux Contact 1 N.C.
30	GS1AD10	Aux Contact Holder

Table 8.68: Shorting Links

For use on:	Shorting Links per Kit	Catalog No.
GS2, 60 A	3	GS1AU203
GS2, 100 A	3	GS1AU303
GS2, 200 A	3	GS1AU403
GS2, 400 A	3	GS1AU503
GS2, 600-800 A	3	GS1AU803

Table 8.69: NFPA79 Kit

For Use With:	Description	Kit Part Number
GS2Q3N	NFPA 79 Internal Handle Kit 400 A Switch Shaft	GS2AD040N
GS2GU3N, GS2GLU3N, GS2JU3N, GS2JLU3N	NFPA 79 Internal Handle Kit 60-200 A Switch Shaft	GS2AD030N
GS1DDU3, GS1DU3	NFPA 79 Internal Handle Kit for 5 mm Shafts	GS1AD010

Table 8.70: Terminal Shrouds for GS Switches, Line or Load [9]

Switch Amperes	Catalog No.	Description
30-100	—	Standard on product
200	GS2AP43	GS2, 3-Pole, 200 A
400	GS2AP53	GS2, 3-Pole, 400 A
600-800	GS2AP73	GS2, 3-Pole, 600-800 A

[6] GS2AH100TO200-GS1 to GS2 Handle Adapter if using GS1 holes.

[7] Not for use with flange disconnects.

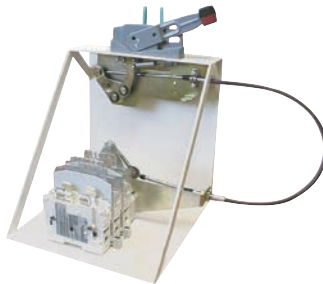
[8] GS1DU3 and GS1DDU3 switches allow up to 4 auxiliary contacts without adding contact holder GS1AD10. For more than 4 contacts, GS1AD10 is required.

[9] Order one terminal shroud per side. For example, order one terminal shroud for either the line side or load side; order two terminal shrouds for both the line side and load side.

New!

Cable Operator Kits for GS2 Switches

Table 8.71: Cable Operator Kits for GS2 Switches [10] [11]



Flange Handle
Cable Operator Kit

Catalog No.	Description
200 A and Below	
GS2AH36F	36 in. Cable Operator Kits for GS2 Switches, 200 A and Below
GS2AH60F	60 in. Cable Operator Kits for GS2 Switches, 200 A and Below
GS2AH120F	120 in. Cable Operator Kits for GS2 Switches, 200 A and Below
GS2AH144F	144 in. Cable Operator Kits for GS2 Switches, 200 A and Below
GS2AH180F	180 in. Cable Operator Kits for GS2 Switches, 200 A and Below
400 A	
GS2AH460F	60 in. Cable Operator Kits for GS2 Switches, 400 A
GS2AH4120F	120 in. Cable Operator Kits for GS2 Switches, 400 A
GS2AH4144F	144 in. Cable Operator Kits for GS2 Switches, 400 A
GS2AH4180F	180 in. Cable Operator Kits for GS2 Switches, 400 A

Table 8.72: Handles for use with Cable Operator Kits

Catalog No.	NEMA Type Enclosure	Type of Handle
9422A1	1, 3, 3R, 4, (Sheet Steel)	6 in.
9422A2	4, 4X (Stainless)	6 in.
9422A3	1, 3, 3R, 4, (Sheet Steel)	4 in.
9422A4	4, 4X (Stainless)	4 in.

Accessories

Table 8.73: Terminal Lugs



Terminal Lugs

For Use On:	Rating	No. of Wires per Lug	No. of Lugs per Terminal	Lug Size (AWG)	Wire Type	Lugs per Kit	Lug Kit Catalog Number
LK4DU3CN	30	1	1	#12-2/0	Cu	—	Standard
LK4GU3CN	60	1	1	#12-2/0	Cu	—	Standard
LK4JU3N	100	1	1	6-300 kcmil	Cu/Al	6	GS1AW403
LK4MU3N	200	1	1	6-300 kcmil	Cu/Al	6	GS1AW403
LK4QU3N	400	2	1	350 MCM-6	Cu/Al	6	GS1AW603
		1	—	600 MCM-4	—	—	—
		2	1	250 MCM-1/0	Cu/Al	6	GS1AW606
LK4SU3N	600	2	1	2 x 2-600 kcmil	Cu/Al	6	GS1AW503
LK4TU3N	800	2	2	2 x 2-600 kcmil	Cu/Al	12	GS1AW903
LK4UU3N	1000	2	2	2 x 2-600 kcmil	Cu/Al	12	GS1AW903
LK4WU3N	1200	2	2	2 x 2-600 kcmil	Cu/Al	12	GS1AW903
GS1DDU3	30	1	1	#14-#10	Cu	—	Standard
GS1DU3	30	1	1	#14-#10	Cu	—	Standard
GS2EEU3	30	1	1	#14-#10	Cu	—	Standard
GS2EU3N	30	1	1	#14-#6	Cu	—	Standard
GS2GU3N	60	1	1	#10-#6	Cu	—	Standard
GS2JU3N	100	1	1	#12-#1	Cu	—	Standard
GS2MU3N	200	1	1	6-300 kcmil	Cu/Al	6	GS1AW403
GS2QU3N	400	2	1	350 MCM-6	Cu/Al	6	GS1AW603
		1	—	600 MCM-4	—	—	—
		2	1	250 MCM-1/0	Cu/Al	6	GS1AW606
GS2SU3	600	2	1	2 x 2-600 kcmil	Cu/Al	6	GS1AW503
GS2TU3	800	2	1	2 x 2-600 kcmil	Cu/Al	6	GS1AW503

Table 8.74: Power Distribution Lugs GS1 or GS2 Only

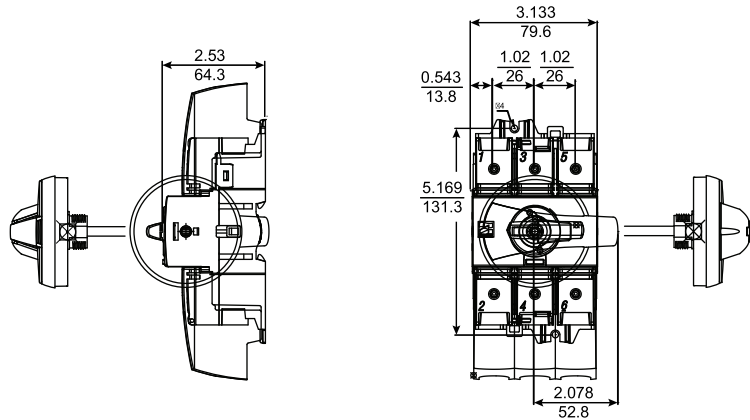
For Use On:	Rating	No. of Wires per Lug	Lug Size (AWG)	Wire Type	Lugs per Kit	Lug Kit Catalog No.
GS1JU3	100	6	#14-#6	Cu	3	GS1AW306 [12]
GS2MU3N	200	12	#14-#4	Cu	3	GS1AW406
GS2QU3N	400	12	#14-#4	Cu	3	GS1AW406
GS2MU3N	200	6	#12-2/0	Cu	3	GS1AW506
GS2QU3N	400	6	#12-2/0	Cu	3	GS1AW506

[10] Does not include handle. For handle, see Table 8.72.

[11] Not compatible with GS2EEU3.

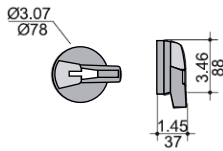
[12] Cannot be used on GS2JU3N.

LK4DU3CN and LK4GU3CN, 30–100 A Compact Nonfusible Disconnect Switches

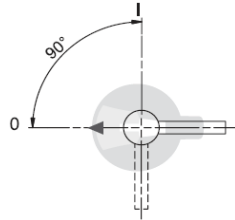


Handle for 30–100 A Compact Nonfusible Disconnect Switches

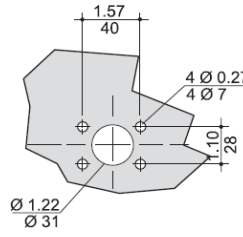
Handle Part No.
LK4AH110CN
LK4AH120CN
LK4AH410CN
LK4AH420CN



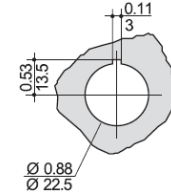
Right-side or front operation



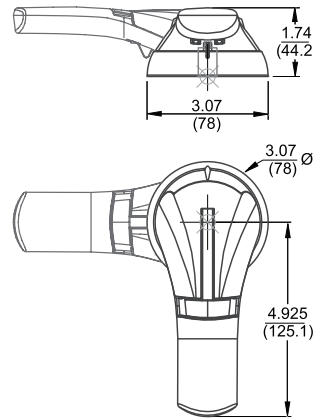
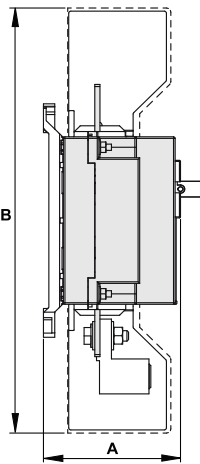
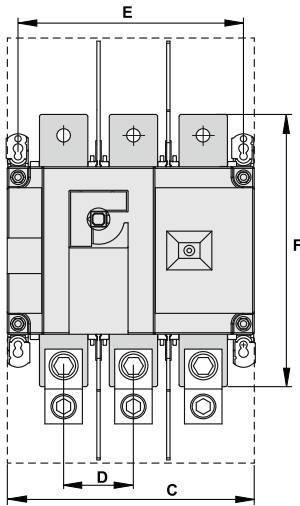
Door drilling with 4 fixing screws



Door drilling with fixing nut

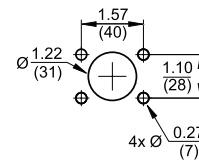


LK4JU3N / LK4MU3N / LK4QU3N, 100–400 A Nonfusible Disconnect Switches—Dimensions



Handle Part No.

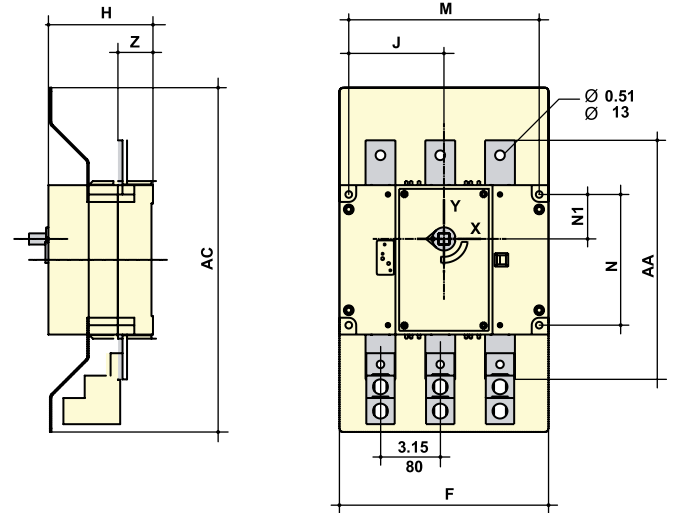
- GS2AH130
- GS2AH140
- GS2AH430
- GS2AH440



Dimensions: $\frac{\text{in.}}{\text{mm}}$

Rating (A)	Dimensions = in. (mm)					
	A	B	C	D	E	F
100–200	3.72 (94.6)	10.1 (256)	7.09 (1.80)	1.97 (50)	6.3 (160)	6.3 (160)
400	4.92 (128)	16 (406)	9.05 (230)	2.56 (65)	8.26 (210)	10.2 (260)

LK4SU3N, 600 A Nonfusible Disconnect Switches—Dimensions



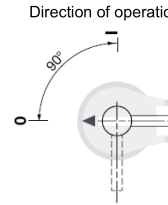
Rating (A)	Dimensions = in. (mm)								
	AC	F	H	J	M	N	N1	AA	Z
600	18.12 (460)	11 (280)	5.5 (140)	5.0 (127.5)	10.03 (255)	6.88 (175)	2.34 (59.5)	12.6 (320)	1.85 (47)

Handle for 600 A and 800 A Fusible Disconnect Switches

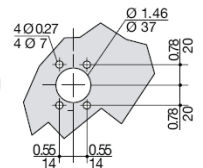
Handle Part No.
GS2AH150
GS2AH160



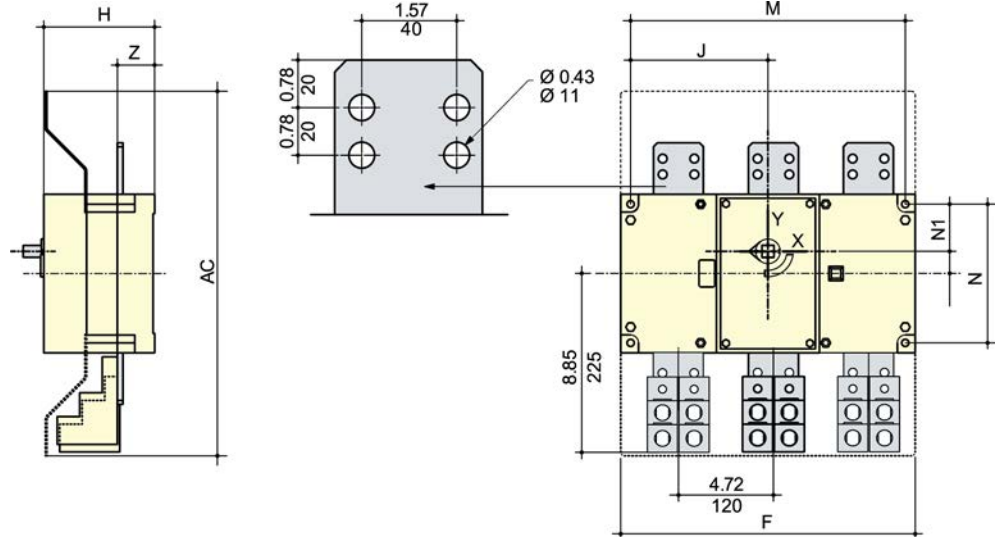
Front operation
Direction of operation



Door drilling template



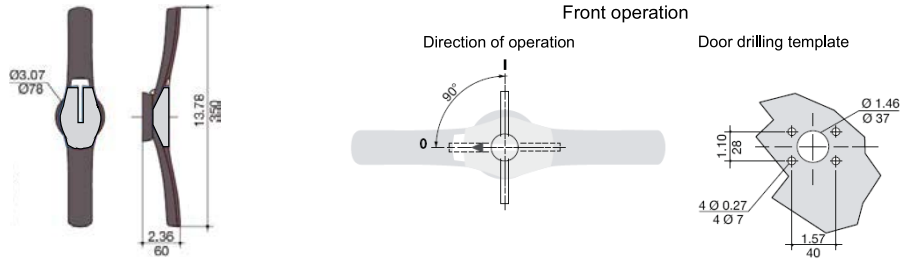
LK4TU3N / LK4UU3N / LK4WU3N, 800–1200 A Nonfusible Disconnect Switches—Dimensions



Rating (A)	Dimensions = in. (mm)							
	AC	F	H	J	M	N	N1	Z
800–1200	18.12 (460)	14.64 (372)	5.5 (140)	6.83 (173.5)	13.66 (347)	6.88 (175)	2.34 (59.5)	1.85 (47)

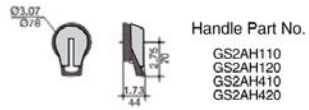
Handle Part No.
GS2AH170
GS2AH180

Dimensions: $\frac{\text{in.}}{\text{mm}}$

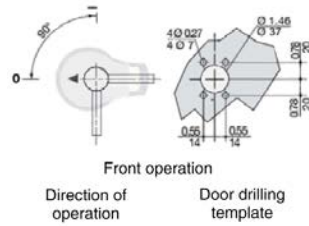


GS1DDU3, 30 A Fusible Disconnect Switches, Class CC Fuses and GS1DU3, 30 A Fusible Disconnect Switches, Class J Fuses—Dimensions

Handle for 30 A and 60 A Fusible Disconnect Switches



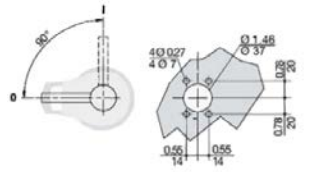
Handle Part No.
GS2AH110
GS2AH120
GS2AH410
GS2AH420



Front operation

Direction of operation

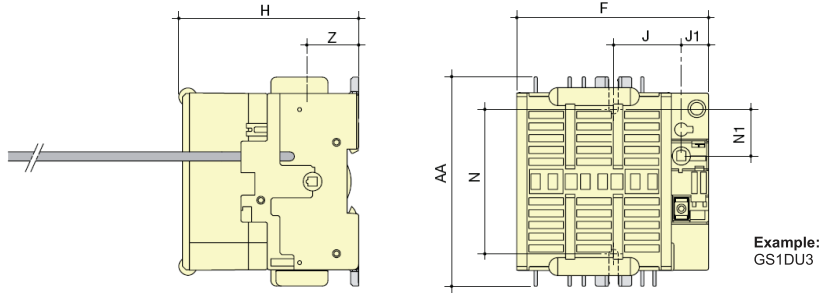
Door drilling template



Side operation

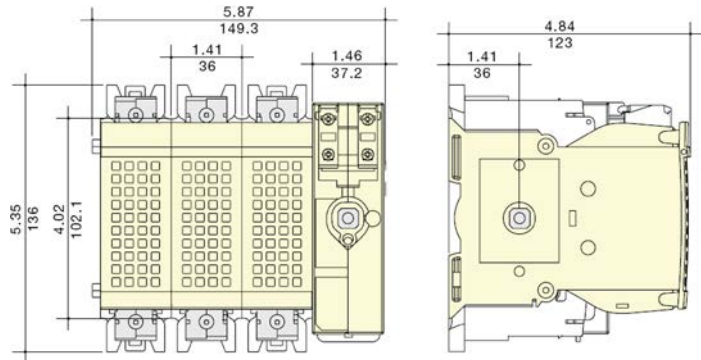
Direction of operation

Door drilling template



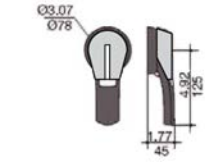
Rating (A)	Dimensions = in. (mm)							
	F	H	J	J1	N	N1	AA	Z
30 / CC	3.78 (96)	3.28 (83.5)	1.47 (37.5)	0.59 (15)	3.13 (79.5)	1 (25.5)	4.56 (116)	1.12 (28.5)
30 / J	4.13 (105)	3.89 (99)	1.47 (37.5)	0.59 (15)	3.13 (79.5)	1 (25.5)	4.56 (116)	1.12 (28.5)

GS2GU3N, 60 A Fusible Disconnect Switches, Class J Fuses

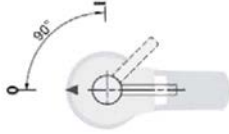


GS2JU3N, 100 A Fusible Disconnect Switches, Class J Fuses

Handle for 100 A, 200 A, and 400 A Fusible Disconnect Switches

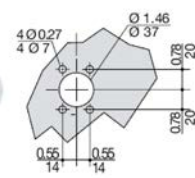


Handle Part No.
GS2AH130
GS2AH140
GS2AH430
GS2AH440

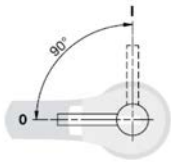


Front operation

Direction of operation

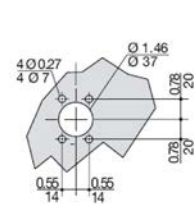


Door drilling template

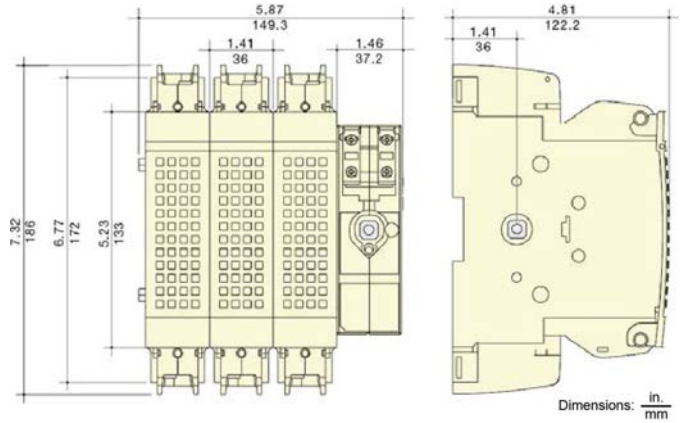


Side operation

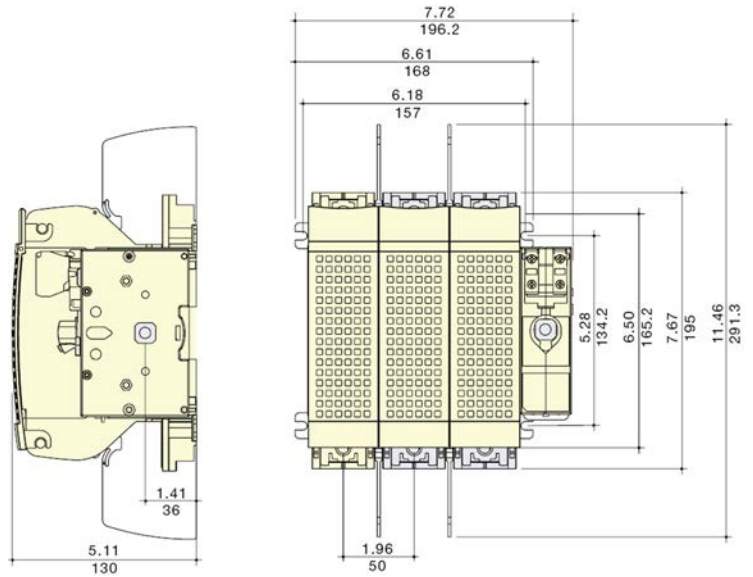
Direction of operation



Door drilling template



GS2MU3N, 200 A Fusible Disconnect Switches, Class J Fuses



Disconnect Switches

The 9422 disconnect switches are the ideal selections for the PV String Combiner Box internal disconnect switch and control panel applications. These switches are designed for variable depth, flange mounting, traditional side mounting and bracket mounting applications providing complete flexibility in the PV string combiner box designs. The switches are compatible with 9422A handle operators and 9423 door mechanisms and are UL 98 recognized (E52369 Vol. 1, Sec. 18) and CSA certified. See [Accessories](#), [page 8-34](#), [Dimensions](#), [page 8-37](#), and [Disconnect Switches—400 A Type TG](#), [page 8-38](#) for dimensional information.

Table 8.75: 9422 Disconnect Switches, Flange Mounted and Variable Depth

Disconnect Switch Size	Variable Depth (in.)	Maximum Horsepower Ratings						Fuse Type	Fuse Clip Rating (Amperes) Non-Interchangeable Type For Class H, J, K or R Fuses		Switch and Operating Mechanism ONLY, Does Not Include Handle Mechanism	Switch for Use With Cable Operators ONLY, Does Not Include Handle Mechanism or Cable Operator [1]	Switch and Operating Mechanism and Handle Mechanism, Overpacked[2]			
		AC Systems Volts (Motor Volts)				Vdc			250 V	600 V			Cat. No. [3]	Cat. No. [3]	Includes Type A1 Handle Mechanism	Includes Type A2 Handle Mechanism
		208 (200)	240 (230)	480 (460)	600 (575)	250	600								Cat. No. [3]	Cat. No. [3]
30 A	6.625–18	7.5	7.5	15	20	5	15	None	—	—	TCN30	TCN30C	ATCN301	ATCN302		
								H, J, K, R	30	—	TCF30	TCF30C	ATCF301	ATCF302		
								60	30	TCF33	TCF33C	ATCF331	ATCF332			
60 A	6.625–18	—	15	30	50	10	30	None	—	—	TDN60	TDN60C	ATDN601	ATDN602		
								H, J, K, R	60	30	TDF60	TDF60C	ATDF601	ATDF602		
								—	60	TDF63	TDF63C	ATDF631	ATDF632			
100 A	6.625–18	25	30	60	75	20	50	None	—	—	TEN10	TEN10C	ATEN101	ATEN102		
								H, J, K, R	100	100	TEF10	TEF10C	ATEF101	ATEF102		
								—	—	—	—	—	—	—		
200 A	9.12–19.25 [4]	40	60	125	150	40	50	None	—	—	TF1	—	ATF11	ATF21		
								H, J, K, R	200	200	TF2	—	ATF12	ATF22		
								—	400	TF3 [5]	—	ATF13 [5]	ATF23 [5]			
400 A Fixed Depth [6]	11.38 (A5 or A6 Handle) [6]	75	125	250	350	50	50	None	—	—	TG1 [7][8]	—	For handle selection, see page 8-34.			
H, J, K, R	400							400	TG2 [7][10]	—						
400 A Variable Depth [6]	15.87–19 (A7 or A8 Handle) [9]							—	—	—	—					

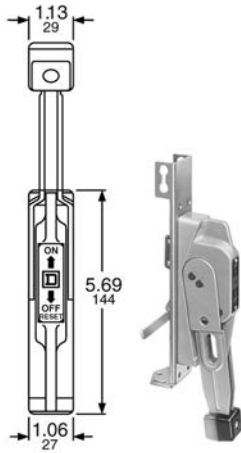


The 9422 Bracket Mount Disconnect Switch is designed for combiner boxes and control panel applications. The Bracket Mount Disconnect Switch is shipped with the switch and external handle assembled to a bracket, ready for quick installation. A protective trim plate is provided to prevent any mounting screws from being accessible from the front. The trim plate also provides an attractive installation feature. The switches are fully compatible with the 9423 closing mechanisms.

Table 8.76: 9422 Bracket Mounted Disconnect Switches

Disconnect Switch Size	Maximum Horsepower Rating						Fuse Type	Fuse Clip Rating (A) Non-Interchangeable Type for Class H, J, K, or R Fuses		Switch and Operating Mechanism Only	
	AC Systems (Motor Volts)				Vdc			250 V	600 V		Cat. No. [11]
	208 (200)	240 (230)	480 (460)	600 (575)	250	600					
30 A	7.5	7.5	15	20	5	15	None	—	—	BTCN30	
							H, J, K, R	30	—	BTCF30	
							J [12]	60	30	BTCF33	
60 A	15	15	30	50	10	30	None	—	—	BTDN60	
							H, J, K, R	60	30	BTDF60	
							J [12]	—	60	BTDF63	
100 A	25	30	60	75	20	50	None	—	—	BTEN10	
							H, J, K, R	100	100	BTEF10	
							J [12]	100	100	BTEF11	
200 A	40	60	125	150	40	50	None	—	—	TFB1	
							H, J, K, R	200	200	TFB2	
							J [12]	—	400	TFB3	

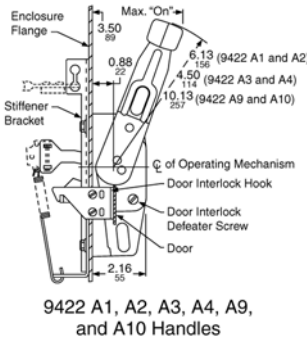
[1] See [Table 8.81 Cable Operators for 9422 Disconnect Switches](#), [page 8-35](#) for ordering information for the cable operator.
 [2] Variable depth only — no cable operator.
 [3] For ordering use the suffix 9422, e.g., order TCN30 using catalog number 9422TCN30.
 [4] 9422 R2 will extend maximum mounting depth 7 inches, see [Table 8.86 Dimensions \(in. / mm\) for 200 A Type TF Disconnect Switches](#), [page 8-37](#) for information.
 [5] Accommodates Class J fuses only.
 [6] Switches are fixed-depth or adjustable depending on handle selection.
 [7] Commercially available enclosures may not accept 9422TG1 and 2 operating mechanisms. Contact enclosure manufacturer for availability of enclosures for use with these switches.
 [8] Right hand flange mounting only and requires a special enclosure.
 [9] Variable in increments of 0.63 inches.
 [10] Right hand flange mounting only and requires a special enclosure.
 [11] For ordering use the suffix 9422, e.g., order BTCN30 using catalog number 9422BTCN30.
 [12] Space saving design—Type J fuses mounted on the non-fused bracket.



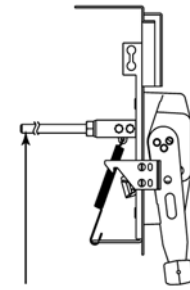
Type A1

Handle Information for 9422 Disconnect Switches

The Handle Mechanism Kit contains all parts needed to mount the handle to the flange of the enclosure. Two flange mounting methods are offered. For right or left hand flange mounting use Types A1–A4 and Types A9–A10 kits. For right-hand mounting only, use Type A5–A8 handles. The type AP1 and AP2 handles are used exclusively on the PowerPact™ M and P operating mechanisms, 9422 RM1 and 9422 CMP. The dimensions are identical to 9422 A1.



9422 A1, A2, A3, A4, A9, and A10 Handles



Rod used only on the variable-depth mechanism

Table 8.77: 9422 Disconnect Switch and Circuit Breaker Handle Mechanisms

Handle Depth (in.)	NEMA Type 1, 3, 3R, 4, 12 Enclosures	NEMA Type 4, 4X Stainless Steel Enclosures
	Cat. No. [13]	Cat. No. [13]
4 [14]	A3	A4
6 [14]	A1	A2
6 [15]	AP1	AP2
10 [16]	A9	A10
12 [17] [18]	A7	A8

Accessories

Class R Fuse Kits

When installed, this kit rejects all fuses except Class R. The kits are available for field installation. With rejection kit and Class R fuses installed, the switch is UL component recognized for use on systems with fault current up to 200,000 RMS symmetrical amperes.

Table 8.78: Class R Fuse Kits

Disconnect Switch Type	Switch Type	Fuse Clip Rating		Class R Kit Cat No.
		250 V [19]	600 V	
30 A	TCF30	30	—	RFK03 [20]
	TCF33	60	30	RFK06 [20]
60 A	TDF60	60	30	RFK06 [20]
	TDF63	—	60	RFK06H [20]
100 A	TEF10	100	100	RFK10 [20]
200 A	TF2	200	200	9999SR4
	TF3	200	200	9999SR4
400 A	TG2	400	400	9999SR5

Electrical Interlocks for Disconnect Switches

Table 8.79: Electrical Interlocks

Disconnect Switch Size	Switch Type	Electrical Interlocks
		Cat No. [21]
30 A 60 A 100 A	TCF, TCN, TDF, TDN, TEF, TEN	TC10 [22]
		TC20 [23]
	BTCF, BTCN, BTDF, BTDN, BTEF, BTEN	TC11 [22]
TC21 [23]		
200 A	TF, ATF	R8 [22]
	TF, ATF	R9 [23]
400 A	TG	R35 [22]
	TG	R36 [23]

[13] For ordering use the suffix 9422, e.g., order A2 using catalog number 9422A2.
 [14] Use with 30–200 A 9422 switches and all circuit breaker mechanisms.
 [15] Use only with 9422 RM1, 9422 CMP and PowerPact M and P operating mechanisms.
 [16] Use with Type D2 remote or dual adapter kit. See [Remote or Dual Adapter Kit](#), page 8-45.
 [17] Use only with 400 A 9422TG1 and 9422TG2 disconnect switch.
 [18] Adjustable depth.
 [19] Use Discount Schedule DE1, not CP1.
 [20] Use Discount Schedule DE1 for price, not CP1.
 [21] For ordering use the suffix 9999, e.g., order TC10 using catalog number 9999TC10.
 [22] 1 N.C. or N.O. Contact depending on wiring.
 [23] 2 N.C. or N.O. or 1 N.O. or 1 N.C. Contact depending on wiring.



Internal Barrier Kits

Provides an additional barrier that helps prevent accidental contact with live parts. Field-installed transparent barriers do not restrict visual inspection of the switch. Barriers provide IEC529 IP2X "finger safe" protection when door of enclosed disconnect switch is open. A convenient door allows use of test probes without accessing fuses and replacement of fuses without removing barrier. Barrier must be used with the skirt kit to enclose a panel mounted 9422 disconnect.

Table 8.80: Internal Barrier Kits

Disconnect Switch Size	Barrier	Skirt
	Cat. No. [24]	Cat No. [24]
30 A	SS06	SS0306SK
60 A	SS06	SS0306SK
100 A	SS10	SS10SK



Cable Operators for 9422 Disconnect Switches

Table 8.81: Cable Operators for 9422 Disconnect Switches

Switch Type	Cable Mechanisms [25]		Cable Mechanisms with A1 Handle for NEMA Type 1, 3, 3R, 4, and 12 Enclosures
	Cable Length (inches)	Cat. No.	
TCN30C, TCF30C, TCF33C, TDN60C, TDF60C, TDF63C, TEN10C, TEF10C	36	9422CFT30	9422CFT31
	48	9422CFT40	—
	60	9422CFT50	9422CFT51
	120	9422CFT10	9422CFT11

Table 8.82: Class 9422 Replacement / Retrofit Fuse Clip Kits

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

Table 8.83: Lug Data

Disconnect Switch Size	Wire Size (Min-Max)		Lug Kits Copper	Lug Kits Al
	Cu	Al	Cat No.	Cat No.
30-60 A	#14-#2	#10-#2	CL0306F	AL0306F
100 A	#10-#0	#6-#0	CL10F	AL10F
200 A	#6-600 kcmil	#6-#600 kcmil	—	—
400 A	#4-500 kcmil	—	—	—

[24] Use Discount Schedule DE1 for price, not CP1.
[25] Purchase handle mechanism separately (9422A1, A2, A3, or A4).

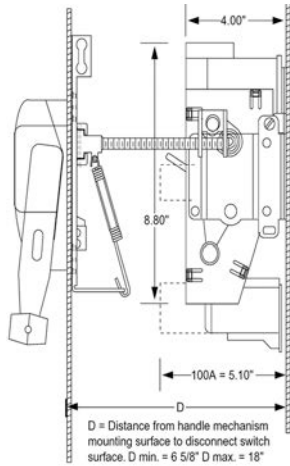
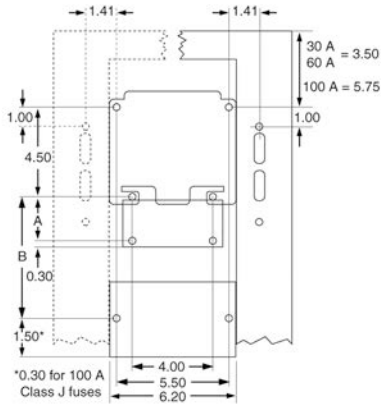


Table 8.84: Dimensions 30, 60, and 100 A Class 9422 Disconnect Switches

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

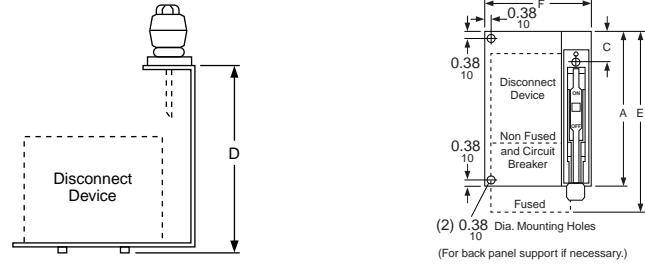


Table 8.85: Dimensions

Type	A in. (mm)	C in. (mm)	D in. (mm)	Min. Enclosure Depth [26] in. (mm)	E in. (mm) Fusible Device	F in. (mm)
BTCN, BTDN, BTEN	—	—	6.56 (167)	8.00 (203)	—	—
BTCF, BTDF, BTEF	9.50 (241)	1.88 (48)	8.56 (217)	10.00 (254)	11.88 (302)	6.38 (162)
TFB1	11.50 (292)	3.88 (99)	9.50 (241)	12.00 (305)	—	13.19 (335)

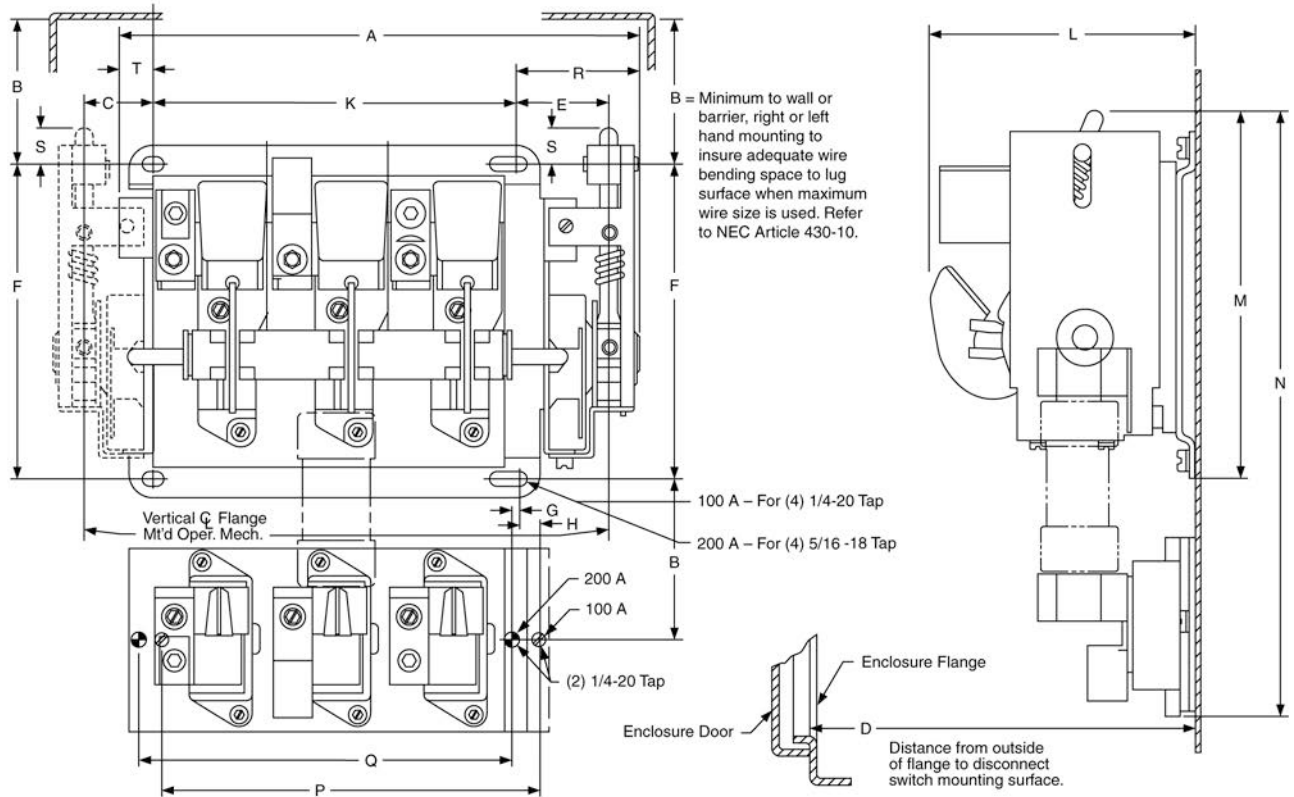
NOTE: Back panel support is recommended for Types TFB1, 2, & 3. Other devices may also require support if the flange is not sufficiently rigid.

[26] The minimum enclosure depth is greater than Dimension D since additional space is needed when mounting the mechanism.

Dimensions

Table 8.86: Dimensions (in. / mm) for 200 A Type TF Disconnect Switches

Type	Switch Size		A	B	C	D [27]	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
	(A)	Fuse Clips																		
TF1	200	None	13.33 339	9.38 238	1.64 42	9.12-19.25 232 489	2.33 59	8.00 203	—	—	—	9.44 240	6.50 165	9.53 242	—	—	—	3.14 80	1.03 26	0.75 19
TF2	200	Class J 200 A 600 V	13.33 339	9.38 238	1.64 42	9.12-19.25 232 489	2.33 59	8.00 203	0.09 3	—	2.77 70	9.44 240	6.50 165	—	14.11 358	—	9.63 245	3.14 80	1.03 26	0.75 19
TF2	200	Class H, K, R 200 A 250 V	13.33 339	9.38 238	1.64 42	9.12-19.25 232 489	2.33 59	8.00 203	0.09 3	—	4.14 105	9.44 240	6.50 165	—	15.48 393	—	9.63 245	3.14 80	1.03 26	0.75 19
TF2	200	Class H, K, R 200 A 600 V	13.33 339	9.38 238	1.64 42	9.12-19.25 232 489	2.33 59	8.00 203	0.09 3	—	6.64 169	9.44 240	6.50 165	—	17.98 457	—	9.63 245	3.14 80	1.03 26	0.75 19
TF3	200	Class J 400 A 600 V	13.33 339	9.38 238	1.64 42	9.12-19.25 232 489	2.33 59	8.00 203	0.09 3	—	2.77 70	9.44 240	6.50 165	9.53 242	18.53 471	—	9.63 245	3.14 80	1.03 26	0.75 19



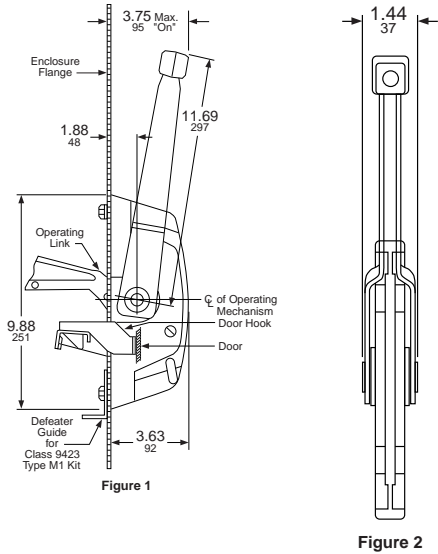
[27] The dimensions shown may be extended 7 in. by using 9422R2 (two required per switch).

Disconnect Switches—400 A Type TG

Outline Dimensions and General Location

400 A Disconnect Switches Nonfusible and Non-Interchangeable Fuse Clip Type Fusible Switches

Table 8.87: Handle Mechanism—Type A7 and A8



NOTE: Commercially available enclosures may not accept type TG operating mechanisms. Contact the enclosure manufacturer for availability of enclosures for use with these switches.

Switch Type	B	X
TG1, 2	11.28 286	16.06 408

NOTE: 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.

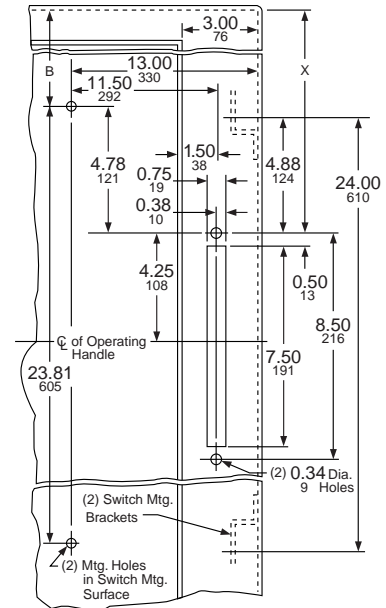


Figure 3

Table 8.88: Nonfusible and Fusible Switches

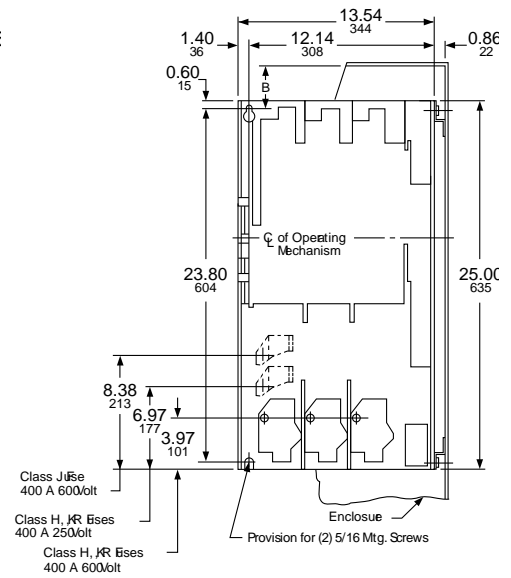
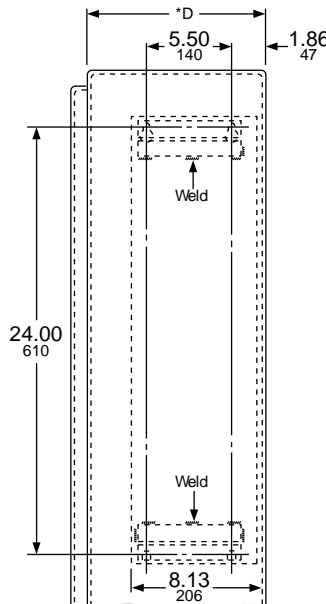
Dimension D = Distance from outside of flange to disconnect switch mounting surface.

For Type TG1 or TG2 with:

Type A7 or A8 adjustable depth handle mechanism	D =	15.87 403	to	19 483
	In steps of	0.63 16		

NOTE: Copper lugs are standard on all Type TG disconnect switches.

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



Dim. = $\frac{\text{in.}}{\text{mm}}$



9421 Type L
Circuit Breaker Mechanism

Type L Circuit Breaker Mechanisms

Type L door-mounted, variable depth operating mechanisms feature heavy duty, all metal construction with trip indication. All mechanisms 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 enclosure when the door is closed. (The 3 in. handle accepts one padlock.) Complete kits are rated for NEMA 1, 3R, and 12 enclosures. They include a handle assembly, operating mechanism, and shaft assembly.

Table 8.89: Complete Kits

Complete Kit Does Not Include Circuit Breaker			Includes Operating Mechanism and Handle					
Use With			Standard 6 in. Handle				Short 3 in. Handle	
			Standard Shaft Kit		Long Shaft Kit		Long Shaft Kit	
Circuit Breaker or Interrupter Type	No. of Poles	Frame Size (A)	Type	Mounting Depth [1]	Type	Mounting Depth [1]	Type	Mounting Depth [1]
NSF, PowerPact™ H and J	2-3	250	LJ1	5-1/2-10-3/4	LJ4	5-1/2-21-3/8	LJ3	5-1/2-21-3/8
PowerPact D and L	2-3	600	LD1	7-1/4-12-1/16	LD4	7-1/4-22-5/8	3 in. handles are not recommended for use with these circuit breakers.	
PowerPact M and P [2]	3	1200	LW1 [3]	9.00-12.50	LW4 [4]	9.00-23.50	3 in. handles are not recommended for use with these circuit breakers.	

Table 8.90: Component Parts

Use With			3 in. Handle Assemblies NEMA 1, 3R, 12	Standard Handle Assemblies NEMA 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 (A)	Type	Type	Type	Mounting Depth [5]	Type	Mounting Depth [5]	Type
NSF, PowerPact H & J	2-3	250	LH3 [6]	LH6 [6]	LJ7	5-1/2-10-1/4	LS8	5-1/2-21-3/8	LS13
PowerPact D & L	2-3	600	[7]	LH6 [6]	LD7	7-1/4-12-1/16	LS8	7-1/4-22-5/8	LS13
PowerPact M & P [2]	3	1200	[7]	LHP8 [6]	LW7	7-3/16-11-5/8	LS8	7-3/16-22-1/4	LS10

Table 8.91: NEMA 4 and 4X Handle Assemblies

Use With			Standard Handle Assemblies		Special 3 in. Version	
Circuit Breaker or Interrupter Type	No. of Poles	Frame Size (A)	NEMA 1, 3R, 4, 12 (Painted)	NEMA 1, 3R, 4, 4X, 12 (Chrome Plated)	NEMA 1, 3R, 4, 12 (Painted)	NEMA 1, 3R, 4, 4X, 12 (Chrome Plated)
			Type	Type	Type	Type
NSF, PowerPact H and J	2-3	250	LH46	LC46	LH43	LC43
PowerPact D and L	2-3	600	LH46	LC46	3 in. handles are not recommended for use with these circuit breakers.	
PowerPact M and P	3	1200	LHP48	LCP48	3 in. handles are not recommended for use with these circuit breakers.	

Table 8.92: Auxiliary and Alarm Switches for PowerPact™ Circuit Breakers [8]

Description	H- and J-Frame	D- and L-Frame	D- and L-Frame
1 Auxiliary Switch 1a 1b	S29450	S29450	S29450
2 Auxiliary Switch 2a 2b	2 x S29450	2 x S29450	2 x S29450
3 Auxiliary Switch 3a 3b	—	3 x S29450	3 x S29450

NOTE: The location of the accessory in the circuit breaker determines its function.



3 in. Handle Assembly

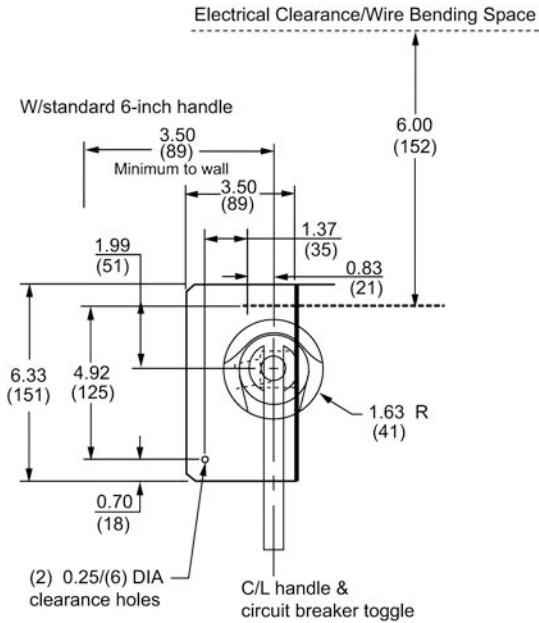


Standard Handle Assembly

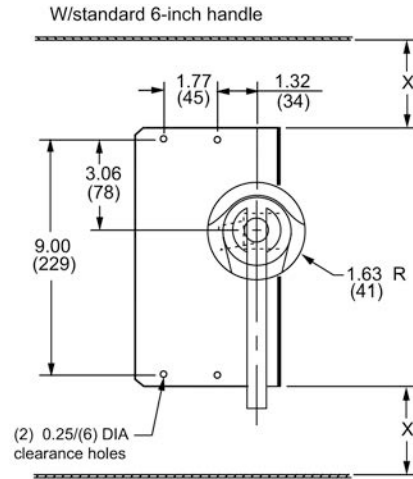
[1] Mounting depth measured in inches from circuit breaker mounting surface (control panel) to outside of enclosure door.
 [2] These circuit breaker operating mechanisms must use the 9421LHP** or LCP** handles only.
 [3] Type LW1 and LW4 include an 8 in. handle (9421LHP8) rather than a 6 in. handle.
 [4] Type LW1 and LW4 include an 8 in. handle (9421LHP8) rather than a 6 in. handle.
 [5] Mounting depth measured in inches from circuit breaker mounting surface (control panel) to outside of enclosure door.
 [6] For a red handle and yellow bezel, add suffix RY to catalog number, e.g., 9421LH6RY.
 [7] 3 in. handles are not recommended for use with these circuit breakers.
 [8] Discount Schedule: DE2.

Dimensions for Type L Operating Mechanisms

Panel Drilling for PowerPact™ H and J Circuit Breaker Operating Mechanisms: 9421LJ1, 9421LJ4, and 9421LJ7

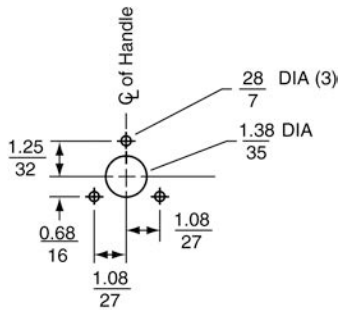


Panel Drilling for PowerPact™ D and L Circuit Breaker Operating Mechanisms: 9421LD1, 9421LD4, and 9421LD7



X: Minimum to wall or barrier to insure adequate wire bending space to lug surface when the maximum wire size is used. Refer to NEC 430-10.

Panel Drilling for PowerPact™ M and P Circuit Breaker Operating Mechanisms: 9421LW1, 9421LW4, and 9421LW7



Door Drilling Dimensions

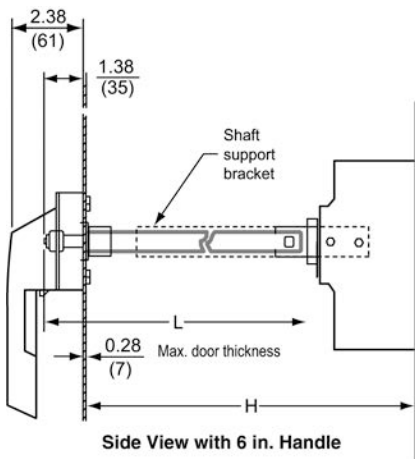
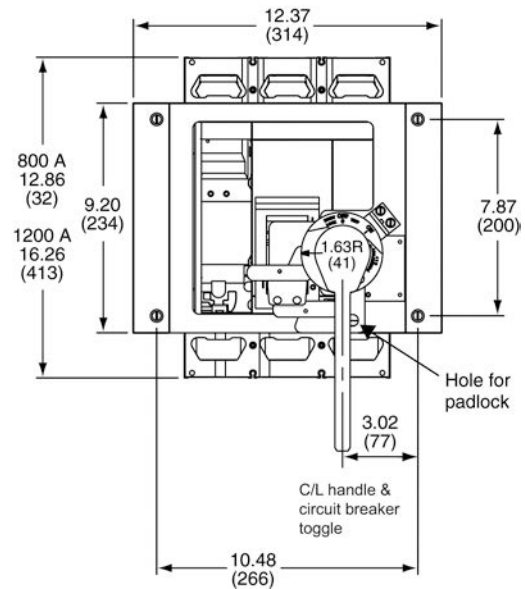
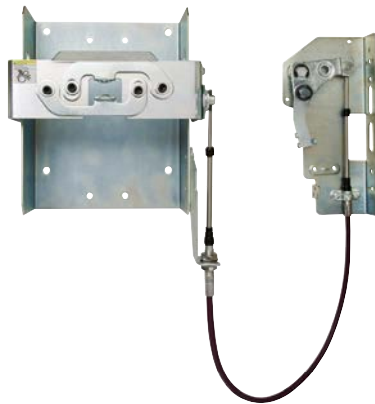


Table 8.93: Shaft Cutting Dimensions

Class	Type	Shaft Length Formula	H = Standard Shaft		H = Long Shaft	
			Min.	Max.	Min.	Max.
9421	LJ1, LJ4, LJ7	L = H - 3.00 (76)	5.5 (138)	10.75 (273)	5.5 (138)	21.63 (543)
9421	LD1, LD4, LD7	L = H - 4.25 (108)	7.25 (184)	12.06 (306)	7.25 (184)	22.63 (575)
9421	LW1, LW4, LW7	L = H - 4.89 (124)	7.19 (183)	11.63 (295)	7.19 (183)	22.25 (565)



Flexible Cable Mechanism
9422CSJ30

Flexible Cable Mechanisms

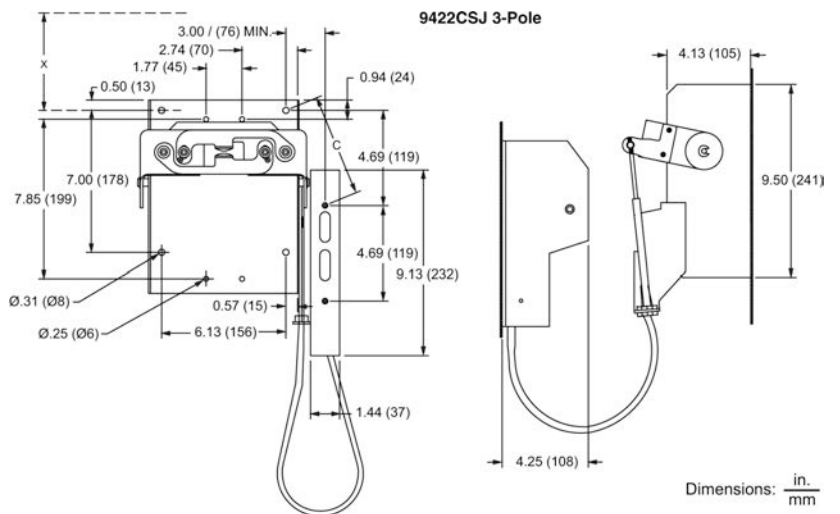
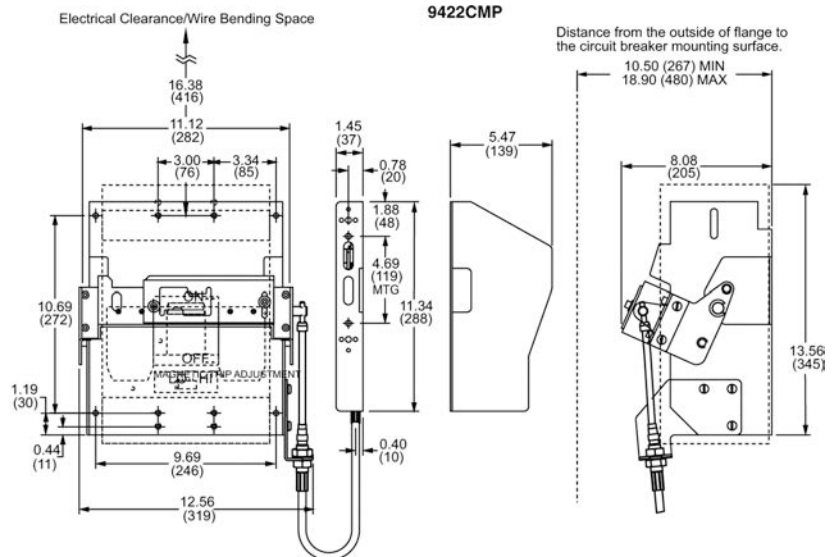
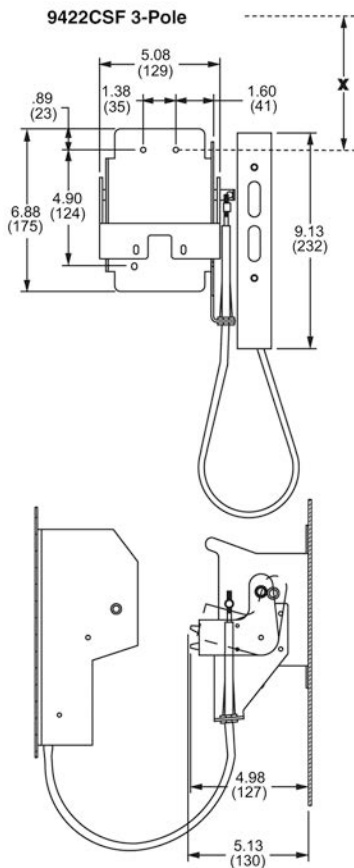
For use with Class 9422 handle operators specially designed for tall, deep enclosures where placement flexibility is required.

Table 8.94: Flexible Cable Mechanisms for use with Schneider Electric™ (formerly Merlin Gerin™) Circuit Breakers and PowerPact™ 3-Pole Circuit Breakers

Circuit Breaker Type	No. of Poles	Frame Size (A)	Cable Mechanism	
			Length	Type
MG-NSF PowerPact H- and J-Frame	2-3	250	36 in.	CSF30
			60 in.	CSF50
			84 in.	CSF70
			120 in.	CSF10
MG-NSF	4	250	36 in.	CSF304
			60 in.	CSF504
			120 in.	CSF104
MG-NSJ PowerPact D- and L-Frame	3	600	36 in.	CSJ30
			60 in.	CSJ50
			120 in.	CSJ10
MG-NSJ PowerPact D- and L-Frame	4	600	36 in.	CSJ304
			60 in.	CSJ504
			120 in.	CSJ104
PowerPact M- and P-Frame [9]	3	1200	48 in.	CMP40
			50 in.	CMP50
			120 in.	CMP10

NOTE: Refer to NEC Article 430-10 for minimum dimension X from circuit breaker top mounting hole to wall or barrier to ensure adequate wire bending space.

NOTE: Bend radius in cable must never be less than 6 inches. Electrical clearances must be maintained between cable and live electrical parts.



Dimensions: $\frac{\text{in.}}{\text{mm}}$

[9] Must use 9422AP1 or 9422AP2 Handle with this operating mechanism.



9422CSFD33

Dual Cable Operating Mechanisms for Square D™ Circuit Breakers

Dual Cable Operating Mechanisms are designed for use with Square D brand PowerPact™ D, H, J, and L circuit breakers through 600 A frame sizes. The cable mechanisms allow for a single handle operator, Class 9422Ax, to operate both circuit breakers. The cable mechanism is designed especially for tall, deep enclosures where placement flexibility is required. There are numerous cable arrangements to choose from to accommodate many applications.

Features

- Separate cables for each circuit breaker
- Rugged metal flange handle operator
- Maximized flexibility of circuit breaker placement for existing and new applications
- Control panel can be fed from two separate supply voltages (if required)
- Dual mechanism allows both separate supply voltages to be controlled by a single handle to improve security features

Table 8.95: Dual Cable Operating Mechanisms Selection

Circuit Breaker Type	Cable Length in. / mm (quantity)	Catalog Number	Frame Size (max.)
PowerPact H & J MG NSF	120 in. / 3048 mm (2)	9422CSFD1	250 A
	36 in. / 914 mm (1) 60 in. / 1524 mm (1)	9422CSFD35	
	60 in. / 1524 mm (1-CSF 3 pole) 60 in. / 1524 mm (1-CSF 4 pole)	9422CSFD345	
	36 in. / 914 mm (1) 120 in. / 3048 mm (1)	9422CSFD31	
	36 in. / 914 mm (2)	9422CSFD33	
	60 in. / 1524 mm (1) 120 in. / 3048 mm (1) 60 in. / 1524 mm (2)	9422CSFD51 9422CSFD55	
PowerPact D & L MG NSJ	60 in. / 1524 mm (2-CSJ)	9422CSJD50 ^[10]	600 A
	120 in. / 3048 mm (2-CSJ)	9422CSJD10 ^[10]	
	60 in. / 1524 mm and 120 in. / 3048 mm (2-CSJ)	9422CSJD51 ^[10]	
	120 in. / 3048 mm (1-CSF) and 120 in. / 3048 mm (1-CSJ)	9422CSFJD10	250 A and 600 A
	60 in. / 1524 mm (1-CSF) 60 in. / 1524 mm (1-CSJ)	9422CSFJD50	

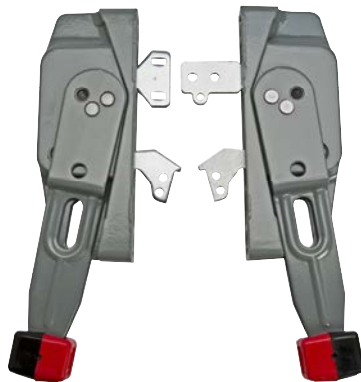
Handle Mechanisms

These handle mechanism kits are used with the circuit breaker variable depth and cable operating mechanisms. The kits contain all parts necessary for mounting the handle to the flange of the enclosure. Types A1/AP1 to A4 are suitable for right or left-hand flange mounting.

Table 8.96: Handle Mechanisms

Type of Handle	NEMA Type Enclosure	Type
6 in.	1, 3, 3R, 4 (sheet steel), 12	A1
	4, 4X (stainless) ^[11]	A2
6 in. ^[12]	1, 3, 3R, 4 (sheet steel), 12	AP1
	4, 4X (stainless) ^[11]	AP2
4 in.	1, 3, 3R, 4 (sheet steel), 12	A3
	4, 4X (stainless) ^[11]	A4

NOTE: See [Handle Information](#), page 8-34 for dimensional information.



Handle Mechanisms

[10] Must use the 9422AP1 or 9422AP2 operating handle with this operating mechanism.

[11] All external metal parts are either stainless steel or a chrome-plated non-ferrous die casting.

[12] Must be used with 9422 RM1, 9422CMP, and 9422CSJD (dual cable mechanism) only.



9422 Type R
Circuit Breaker Mechanism

Flange-Mounted, Variable-Depth Operating Mechanisms

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.

NOTE: The operating mechanisms do not include handle mechanisms. Selection of a 9422A• handle is required to complete the installation.

Table 8.97: Variable-Depth Operating Mechanisms for Use with Schneider Electric™ Brand Circuit Breakers (Formerly Merlin Gerin™ Brand)

Use with				Operating Mechanism (Does Not Include Handle Mechanism)
Circuit Breaker Frame Size	No. of Poles	Frame Size A	Variable Depth Mtg. Range (In.) ^[13]	Type
Schneider Electric (formerly Merlin Gerin) Circuit Breakers and PowerPact™ Frame 3-Pole Circuit Breakers				
MG-NSF PowerPact H- and J-Frame	2-3	250	5.88-17.75	RQ1
MG-NSJ PowerPact D-and L-Frame	3	600	9.00-17.75	RS1
PowerPact M- and P-Frame ^[14]	3	1200	10.50-18.38	RM1

Table 8.98: Electrical Interlocks—Class 9999

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

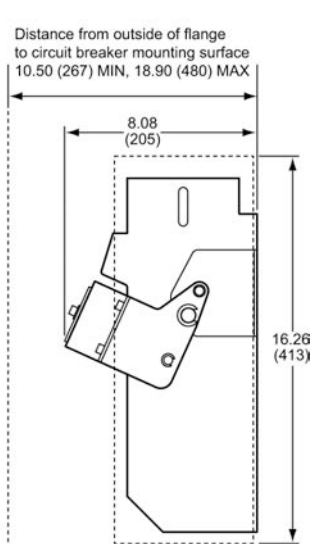
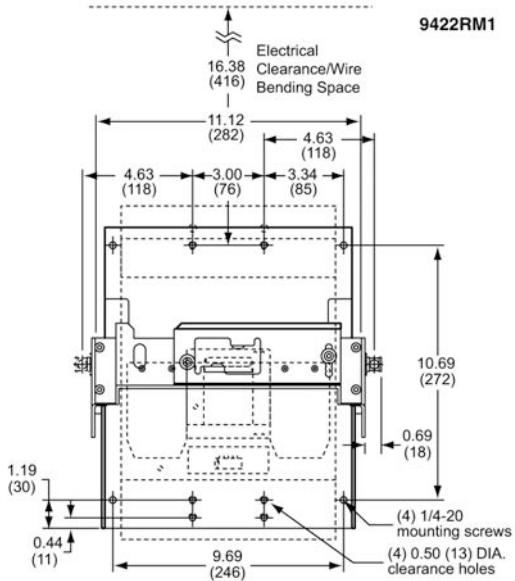
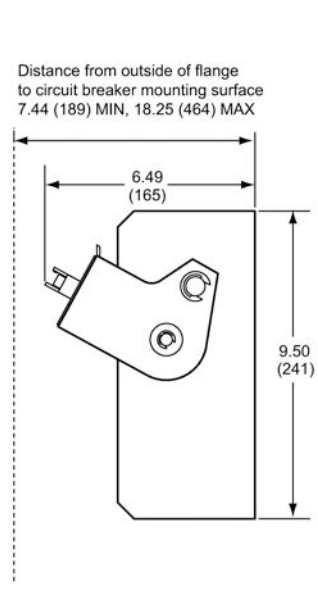
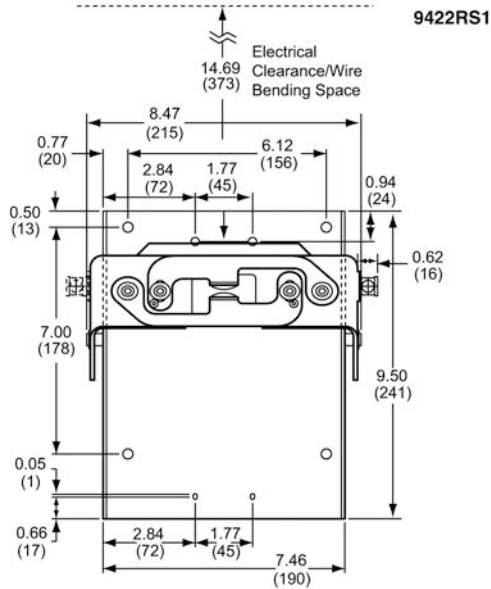
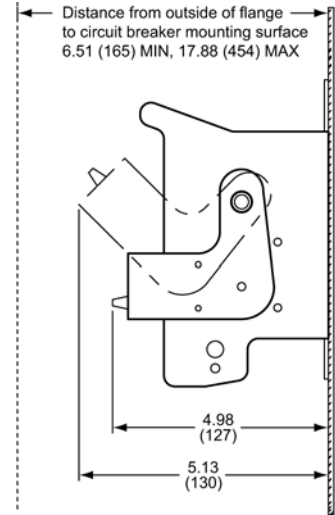
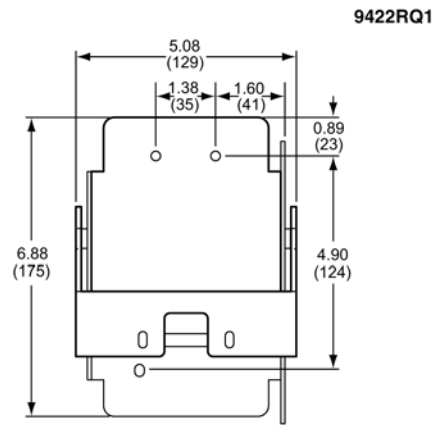
[13] Class 9422 Type R2 will extend mounting depth 7 inches—not recommended for use with the 9422RM1 operating mechanism (see Table 8.77 9422 Disconnect Switch and Circuit Breaker Handle Mechanisms, page 8-34).

[14] These circuit breaker operating mechanisms must use the 9422APx handles.

Minimum to wall or barrier to insure adequate wire bending space to lug surface when the maximum wire size is used with standard lugs. Refer to NEC 430-10.

Dimensions: $\frac{\text{in.}}{\text{mm}}$

Dimensions



Remote or Dual Adapter Kit

For the remote or dual operation of 30, 60, 100, and 200 A disconnect switches.

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: A Class 9422 Type A9 or A10 handle (see [Flange Mounted and Cable Operated](#), page 8-32) and the preferred mounting method **must** be used.

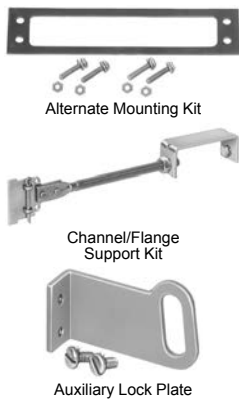
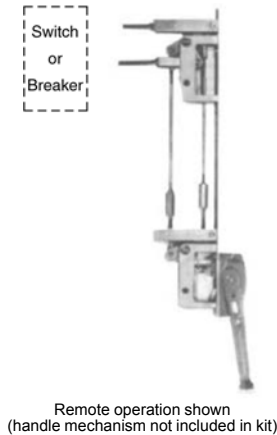


Table 8.99: Disconnect Device

Disconnect Device	Enclosure Mounting Depth		Type
	Min.	Max.	
Disconnect Switch			
30 A Type TCF/TCN	10.63	19.50	D2
60 A Type TDF/TDN	10.63	19.50	
100 A Type TEF/TEN	12.13	20.25	
200 A Type TF	13.13	20.81	

Table 8.100: Other Accessories

Accessory	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 in.	9422	AM2
Channel/Flange Support Kit	Auxiliary kit recommended for use with 30 and 60 A disconnect switches and PowerPact™, NSF, and NSJ 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 A disconnect switches.	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 400 A Type TG Switch—Specify Form Y1572 (000–750 kcmil Cu/Al wire)	—	—
	Anderson Type VCEL Compression Lugs—Specify Form Y1574 Exceptions: None of the 30 A or 60 A disconnect switches are 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 in. (Two are required for Types ARR, RR, ART, RT, ATE, TE, ATF, TF).	9422	R2

Door Closing Mechanisms




Class 9423 door closing mechanisms cover a range of enclosures with door openings up to a maximum of 91 in. high. 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 in. or 8 in. 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. An “Auxiliary Door” is defined to be any remaining doors of a multi-door enclosure which are interlocked with the master door by means of the overhead interlocking system as illustrated on [page 8-46](#) and [page 8-47](#).

Selection Procedure

1. Determine enclosure construction (no. of doors, door height, hinge location, etc.).
2. Determine Class 9422 disconnect device to be used—either a disconnect switch or a circuit breaker mechanism.
3. Determine the location of the disconnect device and handle mechanism (right- or left-hand flange or center channel).
4. Select the door closing mechanism required.
5. Select the 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.)

Table 8.101: Door Closing Mechanism

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

Type M4 Latch bar not included, but most prepunched enclosures that accept Square D™ operating mechanisms supply a pre-drilled latch bar.

The door closing mechanisms listed 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.

Table 8.102: Single Door Enclosures—NEMA Type 4 or 12 with 60 in. High Maximum Opening

Description	For Use On: (Enclosure Type)	Use in Conjunction With:	Door Latch Handle Length	Suggested Maximum Door Opening	Door Depth	Type
Two point, roller latch, door closing mechanism for use on enclosures with doors hinged on the left hand side.	NEMA Type 4 and 12 Sheet Steel	Class 9422 Types A1, A3, A9	4 in.	Less than 39 in.	3/4 in.	M4
			4 in.	Less than 39 in.	[1]	M10
			6 in.	60 in.	3/4 in.	M9
Two point, roller latch, door closing mechanism for use on enclosures with doors hinged on the right hand side.	NEMA Type 4 and 12 Sheet Steel	Class 9422 Types A1, A3, A9	4 in.	Less than 39 in.	3/4 in.	M4L
			4 in.	Less than 39 in.	[1]	M10L
			6 in.	60 in.	3/4 in.	M9L
Third roller latch kit for 3 point locking; for use where 3 point locking is desired or where the door opening is 39 in. or more.	NEMA Type 4 and 12 Sheet Steel	Class 9423 Types M4, M9, M4L, M9L	—	—	3/4 in.	M3
			NEMA Type 4 and 12 Stainless Steel	Class 9423 Types M24, M24L	—	—



Circuit Breaker Operating Mechanism

[1] Suitable for door depths of 1-1/8 in., 1-1/4 in., 1-3/8 in. and 1-1/2 in.

Vault Type for Single and Multi-Door Enclosures

Table 8.103 shows the requirements for the door closing mechanism, the locking bar kit, and the mechanical interlock kit, if used.

Table 8.103: Single or Multi-Door Enclosures—NEMA Type 12 with 40 in. to 60 in. Door Opening

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 <i>each</i> door: 1—M6 door closing mechanism 1—Type M660 locking bar kit	For <i>Master</i> door: 1—M6 door closing mechanism 1—Type M660 locking bar kit 1—Type M5 (for use with 9422A handles)	For <i>each Auxiliary</i> door: 1—M6 door closing mechanism 1—Type M660 locking bar kit Necessary quantities of Types M2 and M7 for each door (see below)

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

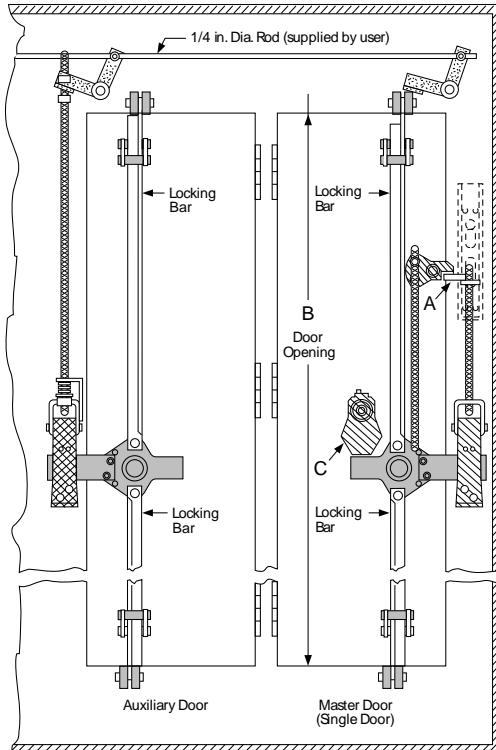


Table 8.104: Door Interlocks

Type	Description
Type M6 Door Closing Mechanism	The Class 9423 Type M6 door closing mechanism is designed to close and seal 0.75 in. 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 in. Vault type handle length is 6 in.
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 in. 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 the opening of 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 at any time, regardless of the disconnect handle position.

Table 8.105: Required Accessories for Auxiliary Doors

Type	Description
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 in. diameter rod used to interconnect the M7 kits is furnished by the user. If the distance between any two Type M7 kits exceeds 36 in., an additional Type M7 kit should be installed to prevent the rod from buckling.

NOTE: A - Interlocking lever extension of the flange-mounted handle mechanism.

NOTE: B - Actual enclosure opening—not door height.

NOTE: C - Screwdriver interlock assembly can be ordered separately. Class 9423 Type CEQ2493.

Vault Type for Single and Multi-Door Enclosures

Table 8.106 shows the requirements for the door closing mechanism, the locking bar kit, and the mechanical interlock kit, if used.

Table 8.106: Single Or Multi-Door Enclosures—NEMA Type 12 with 61 in. to 91 in. Door Openings

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 (for use with 9422A handles)	For each door: 1—M8 door closing mechanism 1—Type M891 locking bar kit	For <i>Master</i> door: 1—M8 door closing mechanism 1—Type M891 locking bar kit 1—Type M1 (for use with 9422A handles)	For each <i>Auxiliary</i> door: 1—M8 door closing mechanism 1—Type M891 locking bar kit Necessary quantities of Types M2 and M7 for each door (see below)

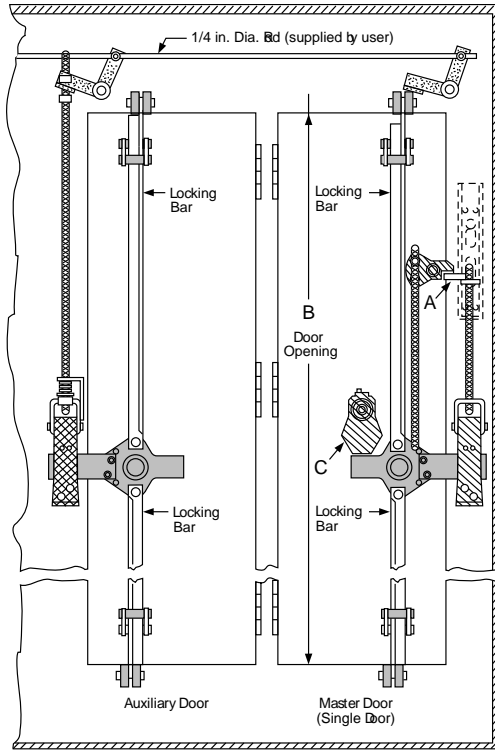
NOTE: All mechanisms listed on this page are suitable for either left or right hand mounting.

Table 8.107: Door Interlocks

Type	Description
Type M8 Door Closing Mechanism	The Class 9423 Type M8 door closing mechanism is designed to close and seal 1.125 in. 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 in. Vault type handle length is 8 in.
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 in.. 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 the opening of 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 at any time, regardless of the disconnect handle position.

Table 8.108: Required Accessories for Auxiliary Doors

Type	Description
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 in. diameter rod used to interconnect the M7 kits is furnished by the user. If the distance between any two Type M7 kits exceeds 36 in., an additional Type M7 kit should be installed to prevent the rod from buckling.



NOTE: A - Interlocking lever extension of the flange-mounted handle mechanism.

NOTE: B - Actual enclosure opening—not door height.

NOTE: C - Screwdriver interlock assembly can be ordered separately. Class 9423 Type CEQ2493.

Enclosure Construction and General Location Information For Types M5 and M6

Drilling and location information below is complete for a single door enclosure with door hinged on left side, incorporating a Type M6, M5, and Class 9422 handle mechanism. Transpose all horizontal dimensions for doors hinged on right side.

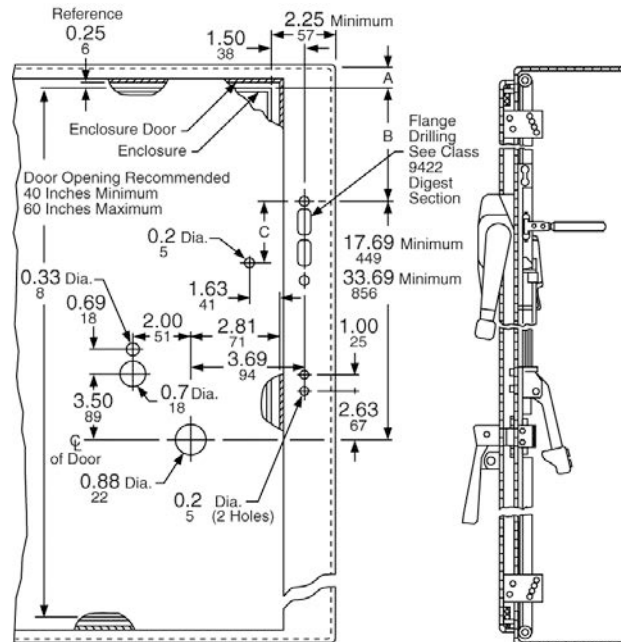
Dimension A

- Single door enclosures: A minimum = 1 in.
- Multi-door enclosures without overhead interlocking system: A minimum = 1 in.
- Multi-door enclosures with overhead interlocking system: A minimum = 4-1/2 in.

NOTE: 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 [Vault Type for Single and Multi-Door Enclosures, page 8-47](#).

Table 8.109: Dimension B (Minimums)

Type	Disconnect Device	If A = 1 Minimum B =	If A = 4-1/2 Minimum B =	C
TCF, TCN, TDF, TDN, TD	60 A Disconnect Switch	3-1/16	2-1/2	3-3/16
TE, TEF, TEN	100 A Disconnect Switch	5-1/4	2-1/2	3-3/16
TF	200 A Disconnect Switch	11-5/8	8-1/8	3-3/16
TG	400 A Disconnect Switch	15-1/16	11-9/16	6-3/4
RN1	FAL, FHL, Circuit Breaker	4-27/32	2-1/2	3-3/16
RP1	KAL, KHL Circuit Breaker	11-5/32	7-21/32	3-3/16
RR2	ILL Circuit Breaker	17-31/32	14-15/32	3-3/16
RT1	MAL, MHL, MEL, MXL Circuit Breaker	18-5/8	15-1/8	3-3/16



Enclosure Construction and General Location Information For Types M1 and M8

Drilling and location information below is complete for a single door enclosure with the door hinged on the left side, incorporating a Type M8, M1, and Class 9422 handle mechanism. Transpose all horizontal dimensions for doors hinged on the right side.

Dimension A

- Single door enclosures: A minimum = 1-1/2 in.
- Multi-Door enclosures without overhead interlocking system:
A minimum = 1-1/2 in.
- Multi-Door enclosures with overhead interlocking system:
A minimum = 4-1/2 in.

NOTE: 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 [Vault Type for Single and Multi-Door Enclosures, page 8-47](#).

Table 8.110: Dimension B (Minimums)

Type	Disconnect Device	If A = 1-1/2 Minimum B =	If A = 4-1/2 Minimum B =	C
TCF, TCN, TDF, TDN, TD	60 A Disconnect Switch	2-15/16	2-1/2	3-3/16
TE, TEF, TEN	100 A Disconnect Switch	4-3/4	2-1/2	3-3/16
TF	200 A Disconnect Switch	11-1/8	8-1/8	3-3/16
TG	400 A Disconnect Switch	14-9/16	11-9/16	5-7/8
RN1	FAL, FHL Circuit Breaker	4-11/32	2-1/2	3-3/16
RP1	KAL, KHL Circuit Breaker	10-21/32	7-21/32	3-3/16
RR2	ILL Circuit Breaker	17-15/32	14-15/32	3-3/16
RT1	MAL, MHL, MEL, MXL Circuit Breaker	18-1/8	15-1/8	3-3/16

