



EAT•N

Cutler-Hammer

Medium Voltage Contactors

Technical Focus

SL Series
IEC Vacuum Contactors

TYPE NO. WL35717A
SER. NO. 9903J28313

May 2005

Medium Voltage Contactors

Contents

<i>Description</i>	<i>Page</i>
Overview	
Features	2
History	2
Technology	2
Applications	2
Design and Test Standards	2
Contactors Features (160 – 400 Amperes)	
Features	3
Benefits	3
Control Voltage Settings	3
Drop-out Time Settings	3
Altitude Designations	3
Ordering Information	
Catalogue Number Selection Chart	4
Accessory Kits (160 – 400 Amperes)	6
Electrical Connections Diagrams	6
Accessory Options (800 Amperes)	7
Catalogue Number Selection Guide	8
Factory Modifications	9
Contactors Component Identification	
“SL” Series (160 – 400 Amperes)	10
Technical Information	
Type “SL” Vacuum Contactor Ratings — 160 Ampere Frame	11
Type “SL” Vacuum Contactor Ratings — 200 Ampere Frame	12
Type “SL” Vacuum Contactor Ratings — 360 Ampere Frame	13
Type “SL” Vacuum Contactor Ratings — 400 Ampere Frame	14
Type “SL” Vacuum Contactor Ratings — 800 Ampere Frame	15
Dimensions and Weights	
160 – 400 Amperes	16
400 Amperes (with Special Front Connected Upper Terminals)	17
800 Amperes	18
Lug Terminal	19
Label Identification	20

Overview

Features

"SL" Contactor Ratings

- Voltages of 2200 through 7200 volts.
- 160 to 800 amperes.
- Interrupting ratings as high as 8500 amperes.

Control Voltages (Field Adjustable)

- 110, 220 50 Hz Vac
- 120, 240 60 Hz Vac
- 125 Vdc

Drop-out Time (Field Adjustable)

- 30 ms
- 50 ms
- 130 ms
- 250 ms
- 330 ms

Global Acceptability

- IEC
- NEMA®
- ANSI

Third-Party Verification

- KEMA
- CSA®
- UL®

Easy-to-Install Option Kits (Field Addition)

- Up to six extra auxiliary contacts.
- Mechanical latch — many coil voltages.

Long Life Guarantees High Quality

- 300,000 electrical operations.
- 2.5 million mechanical operations.

Note: Information may vary for 800 ampere units. Please see **Page 7** for details.

History

In 1982, Eaton introduced its first Vacuum contactor. Used to replace popular air-break contactors of its day, the "SJ" Medium Voltage Contactor quickly revolutionized the world of Medium Voltage Control. Since that time, Vacuum contactors have become the standard of the industry and Eaton, a market leader.

Technology

The "SL" contactor family incorporates world-class Cutler-Hammer® Vacuum Interrupters.



"SL" Contactor Family

Vacuum Interrupters provide:

- Increased safety, reliability and production.
- Improved performance, especially in dusty and corrosive environments.
- Reduce maintenance, downtime and unit weight.
- Quiet operation.
- Less wattage loss.
- High quality and long life.

Applications

Cutler-Hammer "SL" Medium Voltage Contactors starting applications:

- Squirrel-cage induction motors.
- Synchronous motors.
- Wound-rotor

Fully applicable to:

- Full voltage starting.
- Reduced voltage starting.

The perfect choice for harsh duty applications:

- Mining
- Pulp and paper
- HVAC
- Petrochemical
- Automotive
- Many others

Design and Test Standards

- IEC No. 60470
- CSA T.I.L. D-21, File No. LR28548
- ANSI/NEMA ICS 3, Part 2
- UL 347, File No. E63257

May 2005

"SL" Series — 160 – 400 Amperes

Features

- A single family of contactors for any medium voltage control application. Voltage range of 2200 to 7200 volts.
- Amperage ratings from 160 through 400 amperes with Induction Motor kilowatt ranges from 450 kW to 3350 horsepower.
- Three different altitude versions.

Benefits

- Leading-edge vacuum technology.
- Fully complies with global standards.
- Third-party qualified by KEMA, CSA, UL.
- Long life — 300,000 electrical and over 2 million mechanical.
- Mounting flexibility — panel or pedestal mounting provisions are standard. Unit can be mounted in horizontal or vertical position.
- Field-selectable settings for coil voltage, ac/dc, and coil drop-out time.
- Field kits available for auxiliary contacts and mechanical latch. Accessories are common for all sizes.
- Special ordering allows unit to be factory pre-set to customer specification, including field kit installation.
- Highest quality available — All contactors manufactured within state-of-the-art "ISO® Certified" facilities. 100% Made in America.

Note: Information may vary for 800 ampere units. Please see **Page 7** for details.



"SL" Medium Voltage

Table 1. Control Voltage Settings

Setting	SW1	SW2	SW3
100 – 110 Vac/dc	Off	Off	Off
115 – 120 Vac/dc	On	Off	Off
125 Vac/dc	Off	Off	On
200 – 220 Vac/dc	Off	On	Off
230 – 250 Vac/dc	On	On	Off

Table 2. Drop-out Time Settings

Delay Setting	SW4	SW5	SW6
30 ms	Off	Off	Off
50 ms	On	Off	Off
130 ms	Off	On	Off
250 ms	On	On	Off
330 ms	Off	Off	On




Table 3. Altitude Designations ①

Altitude	Low	Standard	High
Meters	- 3500 to -1000	-1000 to +2000	+2000 to +4000
Feet	- 11,483 to -3281	-3281 to +6562	+6562 to +13,123

① Information may vary for 800 ampere units. Please see **Page 7** for details.

Ordering Information

Table 4. Catalogue Number Selection Chart

Contactor Size	Voltage	Ratings		Capacitor Switching (Amperes) ①	Catalogue Number		
		Motor Type	kW		Utilized Operating Elevation ②		
					Standard	Low	High
 <p>160 Ampere</p>	2200 – 2500	Induction	450	120	SLC011S5A-220	SLC011L5A-220	SLC011H5A-220
		Synchronous (0.8 PF)	450				
		Synchronous (1.0 PF)	600				
	3000 – 3600	Induction	675				
		Synchronous (0.8 PF)	675				
		Synchronous (1.0 PF)	750				
	3800 – 4800	Induction	900				
		Synchronous (0.8 PF)	900				
		Synchronous (1.0 PF)	1050				
	6000 – 6900	Induction	1350				
		Synchronous (0.8 PF)	1350				
		Synchronous (1.0 PF)	1650				
 <p>200 Ampere</p>	2200 – 2500	Induction	600	150	SLC012S5A-220	SLC012L5A-220	SLC012H5A-220
		Synchronous (0.8 PF)	600				
		Synchronous (1.0 PF)	750				
	3000 – 3600	Induction	825				
		Synchronous (0.8 PF)	825				
		Synchronous (1.0 PF)	950				
	3800 – 4800	Induction	1100				
		Synchronous (0.8 PF)	1100				
		Synchronous (1.0 PF)	1300				
	6000 – 6900	Induction	1675				
		Synchronous (0.8 PF)	1675				
		Synchronous (1.0 PF)	2050				
 <p>360 Ampere</p>	2200 – 2500	Induction	1100	270	SLC013S5A-220	SLC013L5A-220	SLC013H5A-220
		Synchronous (0.8 PF)	1100				
		Synchronous (1.0 PF)	1300				
	3000 – 3600	Induction	1500				
		Synchronous (0.8 PF)	1500				
		Synchronous (1.0 PF)	1850				
	3800 – 4800	Induction	1850				
		Synchronous (0.8 PF)	1850				
		Synchronous (1.0 PF)	2250				
	6000 – 6900	Induction	3000				
		Synchronous (0.8 PF)	3000				
		Synchronous (1.0 PF)	3750				



① Ratings not applicable for back-to-back switching. Consult factory for back-to-back switching applications.

② Refer to **Table 3** on **Page 3**. Information may vary for 800 ampere units. See **Page 7** for details.

Note: Stock 160 – 400 ampere units are set to 120 Vac coil and 30 ms drop-out time, with 2NO and 2NC auxiliary contacts installed. Coil voltage and drop-out time settings are field selectable. Additional auxiliary contacts and mechanical latch are available in kit form. Units may be ordered with special settings and kits. See **Pages 8** and **9** for details.

May 2005

Table 4. Catalogue Number Selection Chart (Continued)

Contactor Size	Voltage	Ratings		Capacitor Switching (Amperes) ①	Catalogue Number		
		Motor Type	kW		Utilized Operating Elevation ②		
					Standard	Low	High
 <p>400 Ampere</p>	2200 – 2500	Induction	1300	295	SLC014S5A-220	SLC014L5A-220	SLC014H5A-220
		Synchronous (0.8 PF)	1300				
		Synchronous (1.0 PF)	1500				
	3000 – 3600	Induction	1675				
		Synchronous (0.8 PF)	1675				
		Synchronous (1.0 PF)	1850				
	3800 – 4800	Induction	2250				
		Synchronous (0.8 PF)	2250				
		Synchronous (1.0 PF)	2600				
	6000 – 6900	Induction	3350				
		Synchronous (0.8 PF)	3350				
		Synchronous (1.0 PF)	4100				
 <p>800 Ampere</p>	2200 – 2500	Induction	2250	550	SLN018S1A-220	N/A	SLN018H1A-220
		Synchronous (0.8 PF)	2250				
		Synchronous (1.0 PF)	2600				
	3000 – 3600	Induction	3000				
		Synchronous (0.8 PF)	3000				
		Synchronous (1.0 PF)	3750				
	3800 – 4800	Induction	3750				
		Synchronous (0.8 PF)	3750				
		Synchronous (1.0 PF)	4500				
	6000 – 6900	Induction	6000				
		Synchronous (0.8 PF)	6000				
		Synchronous (1.0 PF)	7500				

① Ratings not applicable for back-to-back switching. Consult factory for back-to-back switching applications.

② Refer to Table 3 on Page 3. Information may vary for 800 ampere units. See Page 7 for details.

Note: Stock 160 – 400 ampere units are set to 120 Vac coil and 30 ms drop-out time, with 2NO and 2NC auxiliary contacts installed. Coil voltage and drop-out time settings are field selectable. Additional auxiliary contacts and mechanical latch are available in kit form. Units may be ordered with special settings and kits. See Pages 8 and 9 for details.

“SL” Series — Accessory Kits — 160 – 400 Amperes

**Mechanical Latch Kit —
“SL” Vacuum Contactor Sizes
160 – 400 Amperes**

Field mount to 160 – 400 amperes “SL” Vacuum Contactor. Coil voltages available in a wide range of ac and dc selections. Easy to install on new and existing units.



Mechanical Latch Kit

Ordering Information

Table 5. Mechanical Latch Kit — 160 – 400 Amperes

Coil Voltage	Catalogue Number
24 Vdc	SLA-ML24
32 Vdc	SLA-ML32
48 Vdc	SLA-ML48
110/50, 120/60, 125 dc	SLA-ML120
220/50, 240/60	SLA-ML240

**Auxiliary Contact Kit —
“SL” Vacuum Contactor Sizes
160 – 400 Amperes**

Field mount auxiliary contact kits for 160 – 400 amperes “SL” Vacuum Contactor. Contact kits are available in many configurations of NO-NC.



Auxiliary Contact Kit

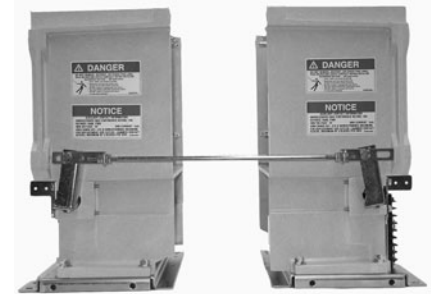
Ordering Information

Table 6. Auxiliary Contact Kit — 160 – 400 Amperes

Coil Voltage	Catalogue Number
3NO-3NC Additional	SLA-AS33
6NO Additional	SLA-AS60
6NC Additional	SLA-AS06
5NO-1NC Additional	SLA-AS51
4NO-2NC Additional	SLA-AS42
2NO-4NC Additional	SLA-AS24
1NO-5NC Additional	SLA-AS15

**Mechanical Interlock Kit —
“SL” Vacuum Contactor Sizes
160 – 400 Amperes**

Field mount mechanical interlock kits for 160 – 400 amperes “SL” Vacuum Contactor.



Mechanical Interlock Kit

Ordering Information

Table 7. Mechanical Interlock Kit — 160 – 400 Amperes

Coil Voltage	Catalogue Number
Vertical or Horizontal Arrangement	SLA-MI

Electrical Connections Diagrams

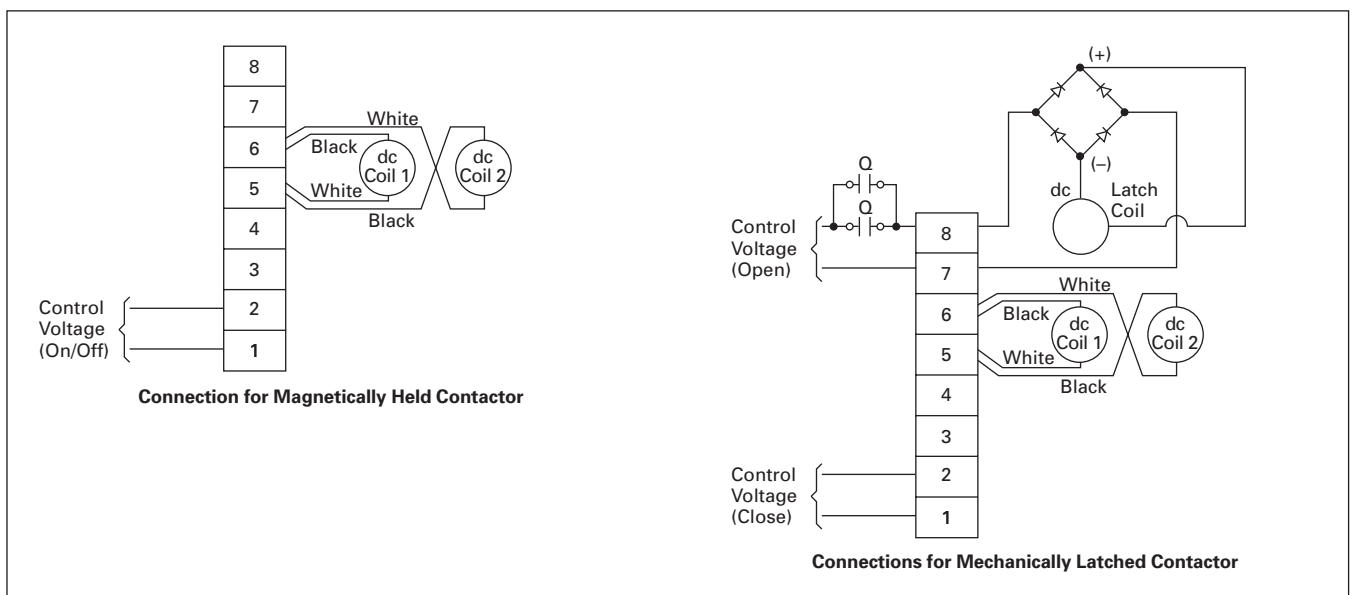
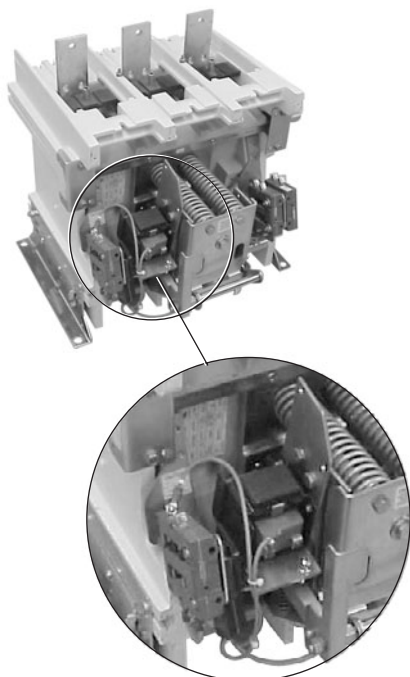


Figure 1. Electrical Connection Diagrams

May 2005

**“SL” Series — Accessory
Options — 800 Amperes**



Mechanical Latch Assembly 800 Amperes

**Mechanical Latch Option — “SL”
Vacuum Contactor Size 800 Amperes**

Factory installed for 800 ampere “SL” Vacuum Contactor. Coil voltages available in a wide range of ac and dc selections. Dual Solenoid Latch also available.

Table 8. Mechanical Latch Coil Voltages

Coil Voltage	
24 Vdc 48 Vdc 96 – 125 Vdc 110/50, 120/60 220/50, 240/60	Double Solenoid Latch also available. Consult factory for details.

Features — “SL” Vacuum Contactor Size 800 Amperes

Table 9. Altitude Designations

Altitude	Low	Standard	High
Meters	N/A	-1000 to +3600	+3600 to +4900
Feet	N/A	-3281 to +11,811	+11,811 to +16,076

Table 10. Contactor Application Ratings

Rated Current		Maximum Interrupting	Short Time Current (1 Second)	Impulse Withstand
Open	Enclosed			
800 A	720 A	13,200 A	10,800 A	60 kV

Table 11. Coil Settings/Drop-out Times

Factory Settings				
Coil Voltages			Drop-out Time	
110/50, 120/60	220/50, 240/60	125 Vdc	115 – 130 ms	190 – 210 ms

Catalogue Number Selection Guide

Table 12. Catalogue Number Selection Guide

SL C 01 2 S 5 U - 22 0

"SL" Contactor Series	
Design	
160 – 400 Amperes	800 Amperes
C = IEC N = NEMA	N = NEMA

Type	
01 = Open Contactor	

Ampere Rating	
1 = 160	
2 = 200	
3 = 360	
4 = 400	
H = 400 Front Connected Line	
8 = 800	

Altitude	
160 – 400 Amperes	800 Amperes
S = Standard (-1000 to +2000 m) L = Low (-3500 to -1000 m) H = High (+2000 to +4000 m)	S = Standard (-1000 to +3600 m) H = High (+3600 to +4900 m)

Coil Drop-out Time	
160 – 400 Amperes ①	800 Amperes
5 = 30 ms 6 = 50 ms 7 = 130 ms 8 = 250 ms 9 = 330 ms	1 = 115 – 130 ms 2 = 190 – 210 ms

Coil Voltage	
160 – 400 Amperes ①	800 Amperes
A = 120/60 B = 240/60 C = 250 Vdc S = 125 Vdc U = 110/50 W = 220/50 X = 110 Vdc Y = 220 Vdc Z = 230/50	A = 110/50, 120/60 B = 220/50, 240/60 S = 125 Vdc

Auxiliary Contacts	
160 – 400 Amperes	800 Amperes
22 = 2NO, 2NC 28 = 2NO, 8NC 37 = 3NO, 7NC 46 = 4NO, 6NC 55 = 5NO, 5NC 64 = 6NO, 4NC 73 = 7NO, 3NC 82 = 8NO, 2NC	22 = 2NO, 2NC

Mechanical Latch		Special Low Profile Latch
160 – 400 Amperes (Coil Voltage)	800 Amperes (Coil Voltage)	160 – 400 Amperes (Coil Voltage)
0 = None 1 = 24 Vdc 2 = 32 Vdc 3 = 48 Vdc 4 = 110/50, 120/60, or 125 Vdc 5 = 220/50, 240/60	0 = None 1 = 24 Vdc 3 = 48 Vdc 4 = 110 (50/60) 5 = 220 (50/60) 6 = 96 – 125 Vdc	A = 24 Vdc B = 32 Vdc C = 48 Vdc D = 100 – 125 Vac/dc E = 220 – 250 Vac/dc

① Field selectable.

May 2005

"SL" Series Factory Modifications

When Ordering Specify

- Refer to Catalogue Number Selection Guide.
- Select Option Codes required.
- Select Base Unit Price.
- Add Pricing for options required.

Design and Test Standards

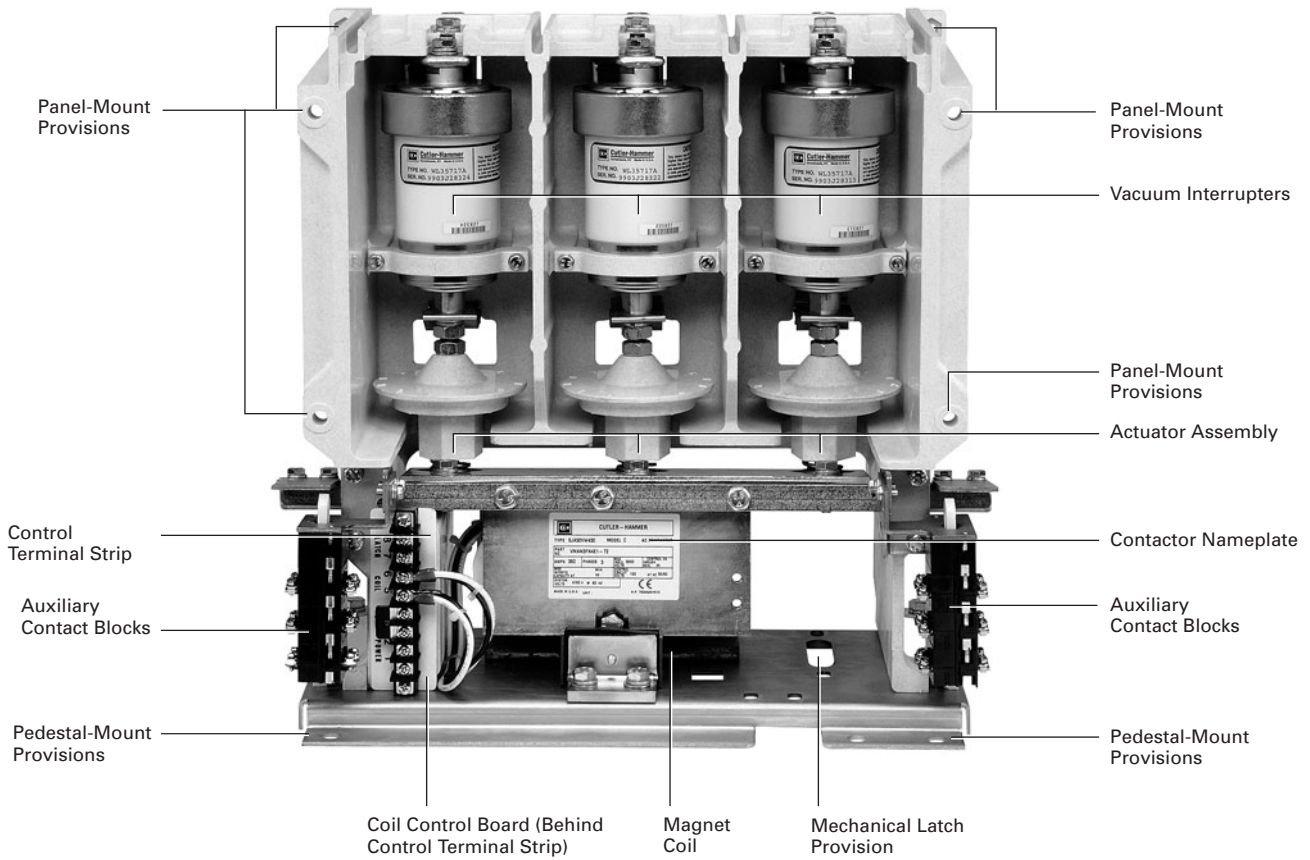
- IEC No. 60470 (160 – 400 A only).
- CSA T.I.L. D-21, File No. LR28548.
- ANSI/NEMA ICS 3, Part 2.
- UL 347, File No. E63257.

Table 13. Factory Modifications

Description	Option Code
Base Price	
160 Ampere "SL" Contactor	1
200 Ampere "SL" Contactor	2
360 Ampere "SL" Contactor	3
400 Ampere "SL" Contactor	4
400 Ampere "SL" Contactor with Front Connected Line Terminals	H
800 Ampere "SL" Contactor	8
Enclosure	
Open	01
Coil Voltage	
100 – 110 Vac/dc	U
115 – 120 Vac/dc	A, X
125 Vac/dc	S
200 – 220 Vac/dc	W, Y
230 – 250 Vac/dc	B, C, Z
Coil Drop-out Time ①	
30 ms (160 – 400 Amperes Only)	5
50 ms (160 – 400 Amperes Only)	6
130 ms (160 – 400 Amperes Only)	7
250 ms (160 – 400 Amperes Only)	8
330 ms (160 – 400 Amperes Only)	9
115 – 130 ms (800 Amperes Only)	1
190 – 210 ms (800 Amperes Only)	2
Auxiliary Contacts	
2NO – 2NC	22
2NO – 8NC (160 – 400 Amperes Only)	28
3NO – 7NC (160 – 400 Amperes Only)	37
4NO – 6NC (160 – 400 Amperes Only)	46
5NO – 5NC (160 – 400 Amperes Only)	55
6NO – 4NC (160 – 400 Amperes Only)	64
7NO – 3NC (160 – 400 Amperes Only)	73
8NO – 2NC (160 – 400 Amperes Only)	82
Mechanical Latch ①	
None	0
24 Vdc Coil	1
32 Vdc Coil (160 – 400 Amperes Only)	2
48 Vdc Coil	3
96 – 125 Vdc Coil (800 Amperes Only)	6
110/50, 120/60 Coil, 125 Vdc Coil (160 – 400 Amperes Only) / 110 (50/60) (800 Amperes Only)	4
220/50, 240/60, Coil	5
Special Low Profile Mechanical Latch (160 – 400 Amperes)	
24 Vdc	A
32 Vdc	B
48 Vdc	C
100 – 125 Vac/dc	D
220 – 250 Vac/dc	E

① Information for 800 ampere units may vary. Please see **Page 7** for details.

“SL” Series — 160 – 400 Amperes

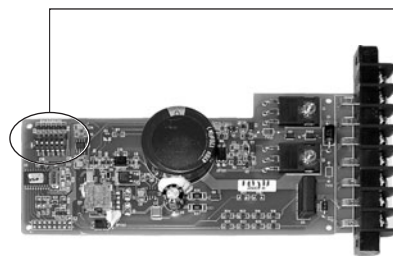


“SL” Series — 160 – 400 Amperes

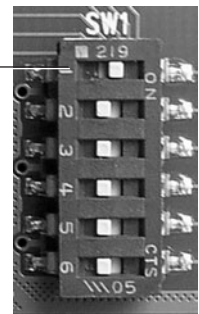
Control Settings



Control Terminal Strip



Coil Control Board



DIP Switches

May 2005

“SL” Series Ratings

Table 14. Type “SL” Vacuum Contactor Ratings 160 Ampere Frame

Rated Utilization Voltage	Interrupting Rating (kA)		Application Table			Transformer (kVA)	Capacitor (Amperes) ①	Maximum Insulation Voltage
	Unfused	Fused	Induction Motor (kW)	Synchronous Motor (kW)				
				(0.8 PF)	(1.0 PF)			
2200 – 2500	4.5	50	450	450	600	600	120	7200
3000 – 3600	4.5	50	675	675	750	800		
3800 – 4800	4.5	50	900	900	1050	1000		
6000 – 6900	4.5	50	1350	1350	1650	1600		

① Ratings not applicable for back-to-back switching. Consult factory for back-to-back switching applications.

Specifications

Maximum Interrupting Current (3 Operations) 4500 Amperes

Rated Current 160 Amperes Enclosed

IEC Make-Break Capability-AC4

Make 1600 Amperes

Break 1280 Amperes

Short Time Current

30 Second 2400 Amperes

1 Second 6000 Amperes

8.7 ms (0.5 Cycle) 63 kA Peak

Normal Service Altitude -1000 to +2000 meters

Mechanical Life 2.5 Million

Electrical Life

AC3 300,000 Operations

AC4 300,000 Operations

Impulse Withstand 60 kV (1.2 x 50 Microseconds)

Dielectric Strength 20 kV rms (1 Minute)

Closing Time 80 Milliseconds (Energization to Contact Touch)

Opening Times (Selectable) 30 – 330 ms

Note: Approximate values. Refer to **Table 2, Page 3** for specific ranges.

Arcing Time 12 ms or Less

Pickup Voltage80% Rated Coil Voltage

Dropout Voltage60% Rated Coil Voltage

Control Voltages

ac/Hz 110/50, 120/60, 220/50, 240/60

dc 125

Control Circuit Burden

Closing 100 – 125 V 1 kVA

200 – 240 V 1.8 kVA

Holding 100 – 125 V 40 VA

200 – 240 V 50 VA

Auxiliary Contact Rating

Voltage (Maximum) 600 Volts

Continuous Current 10 Amperes

Making Capacity (ac) 7200 VA

(dc) 125 VA

Breaking Capacity (ac) 720 VA

(dc) 125 VA

Latch (when Specified)

Mechanical Life 250,000 Operations

Trip Voltage (dc)24 Volts

(dc) 125 Volts

(ac) 110/120 Volts

Minimum Trip Voltage80% Rated Coil Voltage

Trip Burden 400 VA

Trip Time 30 ms

Weight 21.4 kg

“SL” Series Ratings (Continued)

Table 15. Type “SL” Vacuum Contactor Ratings 200 Ampere Frame

Rated Utilization Voltage	Interrupting Rating (kA)		Application Table			Transformer (kVA)	Capacitor (Amperes) ①	Maximum Insulation Voltage
	Unfused	Fused	Induction Motor (kW)	Synchronous Motor (kW)				
				(0.8 PF)	(1.0 PF)			
2200 – 2500	4.5	50	600	600	750	750	150	7200
3000 – 3600	4.5	50	825	825	950	1000		
3800 – 4800	4.5	50	1100	1100	1300	1250		
6000 – 6900	4.5	50	1675	1675	2050	2000		

① Ratings not applicable for back-to-back switching. Consult factory for back-to-back switching applications.

Specifications

Maximum Interrupting Current (3 Operations) 4500 Amperes

Rated Current 200 Amperes Enclosed

IEC Make-Break Capability-AC4

Make 2000 Amperes

Break 1600 Amperes

Short Time Current

30 Second 2400 Amperes

1 Second 6000 Amperes

8.7 ms (0.5 Cycle) 63 kA Peak

Normal Service Altitude -1000 to +2000 meters

Mechanical Life 2.5 Million

Electrical Life

AC3 300,000 Operations

AC4 300,000 Operations

Impulse Withstand 60 kV (1.2 x 50 Microseconds)

Dielectric Strength 20 kV rms (1 Minute)

Closing Time 80 Milliseconds (Energization to Contact Touch)

Opening Times (Selectable) 30 – 330 ms

Note: Approximate values. Refer to Table 2, Page 3 for specific ranges.

Arcing Time 12 ms or Less

Pickup Voltage 80% Rated Coil Voltage

Dropout Voltage 60% Rated Coil Voltage

Control Voltages

ac/Hz 110/50, 120/60, 220/50, 240/60

dc 125

Control Circuit Burden

Closing 100 – 125 V 1 kVA

200 – 240 V 1.8 kVA

Holding 100 – 125 V 40 VA

200 – 240 V 50 VA

Auxiliary Contact Rating

Voltage (Maximum) 600 Volts

Continuous Current 10 Amperes

Making Capacity (ac) 7200 VA

(dc) 125 VA

Breaking Capacity (ac) 720 VA

(dc) 125 VA

Latch (when Specified)

Mechanical Life 250,000 Operations

Trip Voltage (dc) 24 Volts

(dc) 125 Volts

(ac) 110/120 Volts

Minimum Trip Voltage 80% Rated Coil Voltage

Trip Burden 400 VA

Trip Time 30 ms

Weight 21.4 kg

May 2005

“SL” Series Ratings (Continued)

Table 16. Type “SL” Vacuum Contactor Ratings 360 Ampere Frame

Rated Utilization Voltage	Interrupting Rating (kA)		Application Table			Transformer (kVA)	Capacitor (Amperes) ①	Maximum Insulation Voltage
	Unfused	Fused	Induction Motor (kW)	Synchronous Motor (kW)				
				(0.8 PF)	(1.0 PF)			
2200 – 2500	4.5	50	1100	1100	1300	1200	270	7200
3000 – 3600	4.5	50	1500	1500	1850	1600		
3800 – 4800	4.5	50	1850	1850	2250	2000		
6000 – 6900	4.5	50	3000	3000	3750	3200		

① Ratings not applicable for back-to-back switching. Consult factory for back-to-back switching applications.

Specifications

Maximum Interrupting Current (3 Operations) 4500 Amperes

Rated Current 360 Amperes Enclosed

IEC Make-Break Capability-AC4

Make 3600 Amperes
Break 2880 Amperes

Short Time Current

30 Second 2400 Amperes
1 Second 6000 Amperes
8.7 ms (0.5 Cycle) 63 kA Peak

Normal Service Altitude -1000 to +2000 meters

Mechanical Life 2.5 Million

Electrical Life

AC3 300,000 Operations
AC4 300,000 Operations

Impulse Withstand 60 kV (1.2 x 50 Microseconds)

Dielectric Strength 20 kV rms (1 Minute)

Closing Time 80 Milliseconds
(Energization to Contact Touch)

Opening Times (Selectable) 30 – 330 ms

Note: Approximate values. Refer to **Table 2, Page 3** for specific ranges.

Arcing Time 12 ms or Less

Pickup Voltage80% Rated Coil Voltage

Dropout Voltage60% Rated Coil Voltage

Control Voltages

ac/Hz 110/50, 120/60, 220/50, 240/60
dc 125

Control Circuit Burden

Closing 100 – 125 V 1 kVA
200 – 240 V 1.8 kVA
Holding 100 – 125 V 40 VA
200 – 240 V 50 VA

Auxiliary Contact Rating

Voltage (Maximum) 600 Volts
Continuous Current 10 Amperes
Making Capacity (ac) 7200 VA
(dc) 125 VA
Breaking Capacity (ac) 720 VA
(dc) 125 VA

Latch (when Specified)

Mechanical Life 250,000 Operations
Trip Voltage (dc)24 Volts
(dc) 125 Volts
(ac) 110/120 Volts
Minimum Trip Voltage80% Rated Coil Voltage
Trip Burden 400 VA
Trip Time 30 ms

Weight 21.4 kg

“SL” Series Ratings (Continued)

Table 17. Type “SL” Vacuum Contactor Ratings 400 Ampere Frame

Rated Utilization Voltage	Interrupting Rating (kA)		Application Table			Transformer (kVA)	Capacitor (Amperes) ①	Maximum Insulation Voltage
	Unfused	Fused	Induction Motor (kW)	Synchronous Motor (kW)				
				(0.8 PF)	(1.0 PF)			
2200 – 2500	8.5	50	1300	1300	1500	1500	295	7200
3000 – 3600	8.5	50	1675	1675	1850	2000		
3800 – 4800	8.5	50	2250	2250	2600	2500		
6000 – 6900	8.5	50	3350	3350	4100	4000		

① Ratings not applicable for back-to-back switching. Consult factory for back-to-back switching applications.

Specifications

Maximum Interrupting Current (3 Operations) 8500 Amperes

Rated Current 400 Amperes Enclosed

IEC Make-Break Capability-AC4

Make 4000 Amperes

Break 3200 Amperes

Short Time Current

30 Second 2400 Amperes

1 Second 6000 Amperes

8.7 ms (0.5 Cycle) 63 kA Peak

Normal Service Altitude -1000 to +2000 meters

Mechanical Life 2.5 Million

Electrical Life

AC3 300,000 Operations

AC4 300,000 Operations

Impulse Withstand 60 kV (1.2 x 50 Microseconds)

Dielectric Strength 20 kV rms (1 Minute)

Closing Time 80 Milliseconds (Energization to Contact Touch)

Opening Times (Selectable) 30 – 330 ms

Note: Approximate values. Refer to **Table 2, Page 3** for specific ranges.

Arcing Time 12 ms or Less

Pickup Voltage 80% Rated Coil Voltage

Dropout Voltage 60% Rated Coil Voltage

Control Voltages

ac/Hz 110/50, 120/60, 220/50, 240/60

dc 125

Control Circuit Burden

Closing 100 – 125 V 1 kVA

200 – 240 V 1.8 kVA

Holding 100 – 125 V 40 VA

200 – 240 V 50 VA

Auxiliary Contact Rating

Voltage (Maximum) 600 Volts

Continuous Current 10 Amperes

Making Capacity (ac) 7200 VA

(dc) 125 VA

Breaking Capacity (ac) 720 VA

(dc) 125 VA

Latch (when Specified)

Mechanical Life 250,000 Operations

Trip Voltage (dc) 24 Volts

(dc) 125 Volts

(ac) 110/120 Volts

Minimum Trip Voltage 80% Rated Coil Voltage

Trip Burden 400 VA

Trip Time 30 ms

Weight 21.4 kg

May 2005

“SL” Series Ratings (Continued)

Table 18. Type “SL” Vacuum Contactor Ratings 800 Ampere Frame

Rated Utilization Voltage	Interrupting Rating (kA)		Application Table			Transformer (kVA)	Capacitor (Amperes) ①	Maximum Insulation Voltage
	Unfused	Fused	Induction Motor (kW)	Synchronous Motor (kW)				
				(0.8 PF)	(1.0 PF)			
2200 – 2500	13.2	50	2250	2250	2600	2500	550	7200
3000 – 3600	13.2	50	3000	3000	3750	3500		
3800 – 4800	13.2	50	3750	3750	4500	4500		
6000 – 6900	13.2	50	6000	6000	7500	6000		

① Ratings not applicable for back-to-back switching. Consult factory for back-to-back switching applications.

Specifications

Maximum Interrupting Current (3 Operations) 13200 Amperes

Rated Current 800 Amperes Enclosed

IEC Make-Break Capability-AC4
 Make 8000 Amperes
 Break 6400 Amperes

Short Time Current
 30 Second 4320 Amperes
 1 Second 10800 Amperes
 8.7 ms (0.5 Cycle) 86 kA Peak

Normal Service Altitude -1000 to +2000 meters

Mechanical Life 2.5 Million

Electrical Life
 AC3 300,000 Operations
 AC4 300,000 Operations

Impulse Withstand 60 kV (1.2 x 50 Microseconds)

Dielectric Strength 20 kV rms (1 Minute)

Closing Time 80 Milliseconds (Energization to Contact Touch)

Opening Times (Selectable) 30 – 330 ms

Note: Approximate values. Refer to **Table 2, Page 3** for specific ranges.

Arcing Time 12 ms or Less

Pickup Voltage 80% Rated Coil Voltage

Dropout Voltage 60% Rated Coil Voltage

Control Voltages
 ac/Hz 110/50, 120/60, 220/50, 240/60
 dc 125

Control Circuit Burden
 Closing 100 – 125 V 1 kVA
 200 – 240 V 1.8 kVA
 Holding 100 – 125 V 40 VA
 200 – 240 V 50 VA

Auxiliary Contact Rating
 Voltage (Maximum) 600 Volts
 Continuous Current 10 Amperes
 Making Capacity (ac) 7200 VA
 (dc) 125 VA
 Breaking Capacity (ac) 720 VA
 (dc) 125 VA

Latch (when Specified)
 Mechanical Life 250,000 Operations
 Trip Voltage (dc) 24 Volts
 (dc) 125 Volts
 (ac) 110/120 Volts
 Minimum Trip Voltage 80% Rated Coil Voltage
 Trip Burden 400 VA
 Trip Time 30 ms

Weight 21.4 kg

“SL” Series — 160 – 400 Amperes



Front View 160 – 400 Amperes



Rear View 160 – 400 Amperes

Table 19. Dimensions and Weights

Ampere Size	Mounting	Weight	
		kg	Lbs.
160	Panel or Pedestal	21.4	47
200	Panel or Pedestal	21.4	47
360	Panel or Pedestal	21.4	47
400	Panel or Pedestal	22.2	49

Dimensional Drawings 160 – 400 Amperes in mm (Inches)

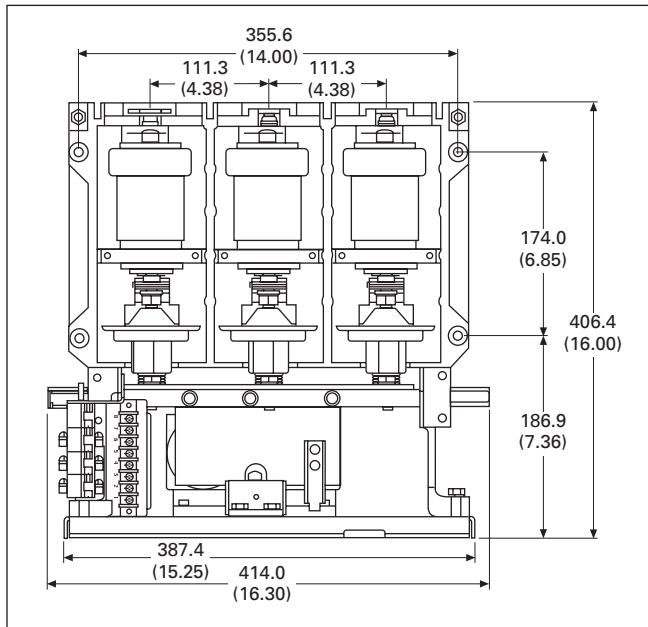


Figure 2. Front Dimensions 160 – 400 Amperes

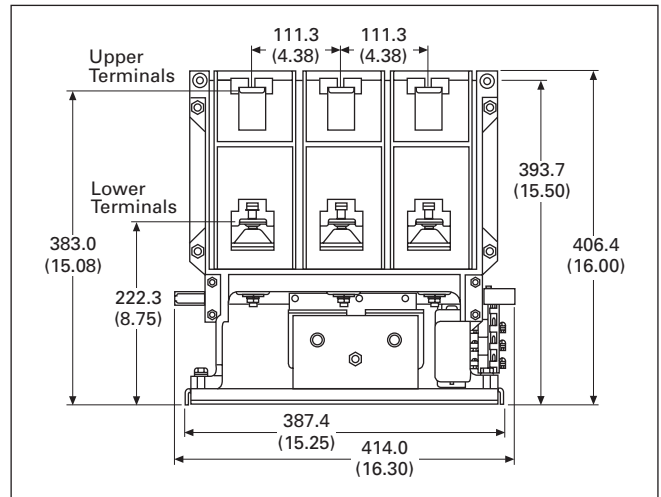


Figure 4. Rear Dimensions 160 – 400 Amperes

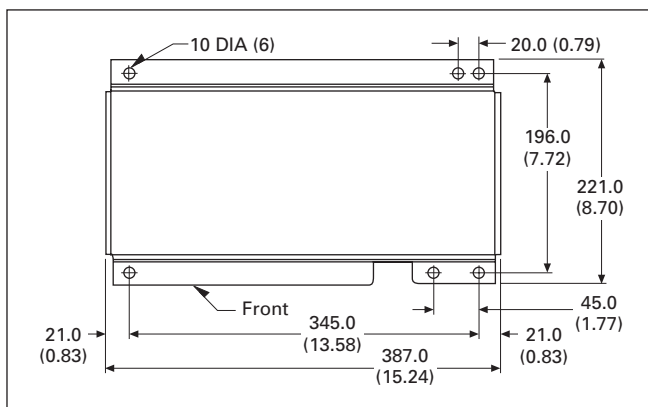


Figure 3. Base Plate Dimensions 160 – 400 Amperes

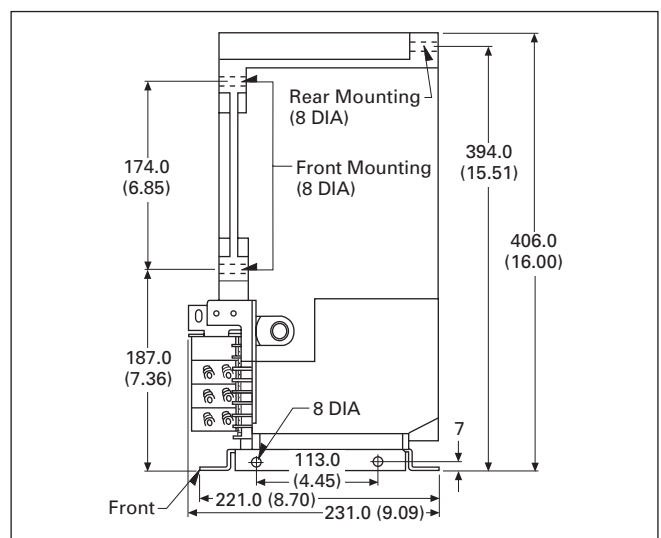
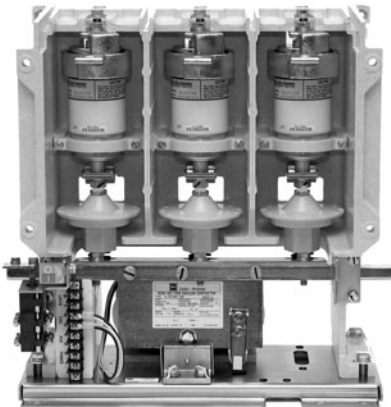


Figure 5. Side Dimensions 160 – 400 Amperes

May 2005

“SL” Series — 400 Amperes (with Special Front Connected Upper Terminals)



Front View 400 Amperes



Rear View 400 Amperes

Table 20. Dimensions and Weights

Ampere Size	Mounting	Weight	
		kg	Lbs.
400	Panel or Pedestal	22.2	49

Dimensional Drawings 400 Amperes in mm (Inches)

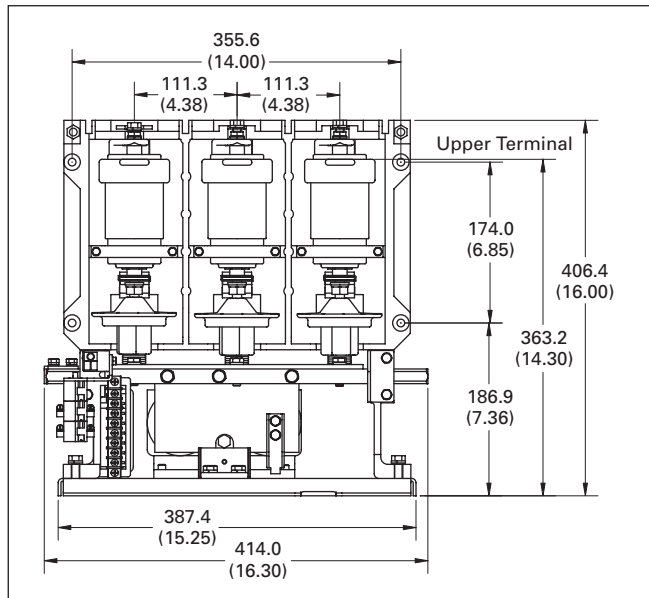


Figure 6. Front Dimensions 400 Amperes

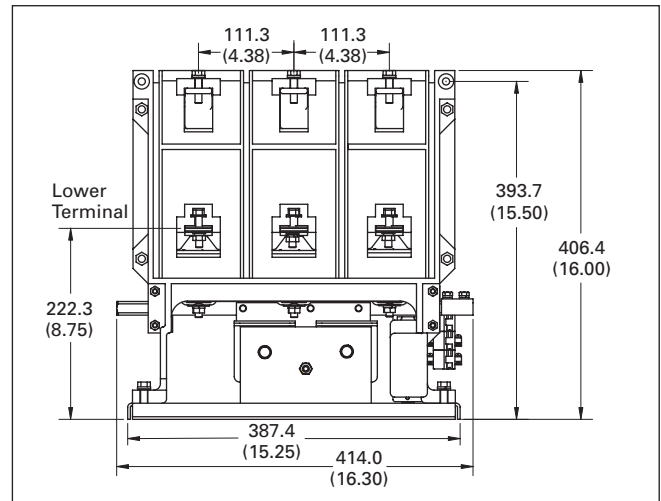


Figure 8. Rear Dimensions 400 Amperes

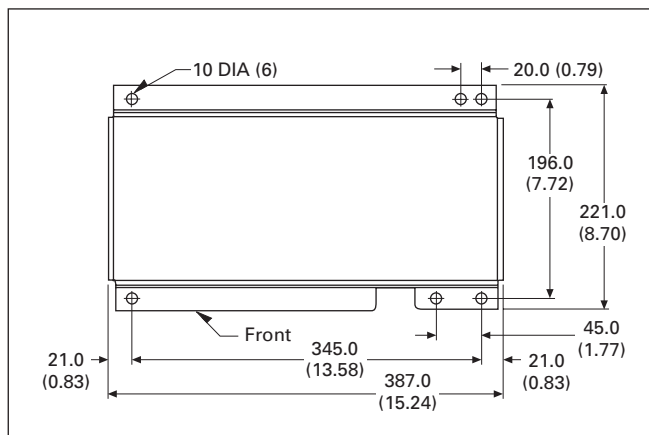


Figure 7. Base Plate Dimensions 400 Amperes

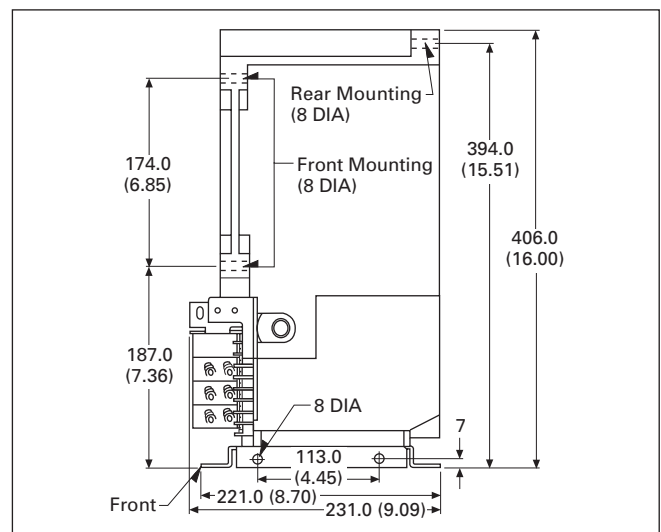
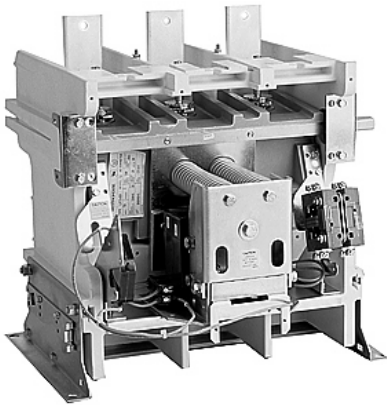
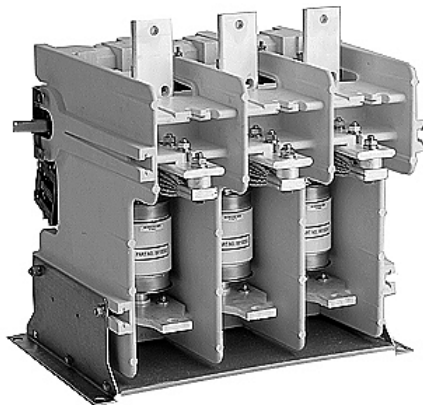


Figure 9. Side Dimensions 400 Amperes

“SL” Series — 800 Ampere



Front View 800 Amperes



Rear View 800 Amperes

Table 21. Dimensions and Weights

Ampere Size	Mounting	Weight	
		kg	Lbs.
800	Pedestal	43.2	95

Dimensional Drawings 800 Amperes in mm (Inches)

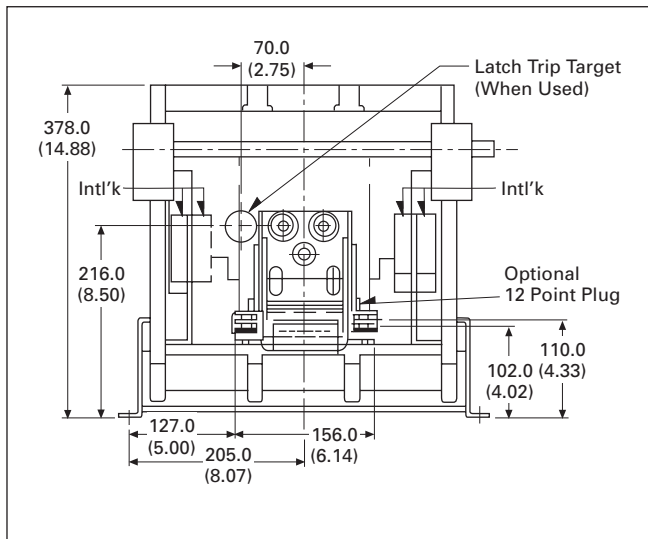


Figure 10. Front Dimensions 800 Amperes

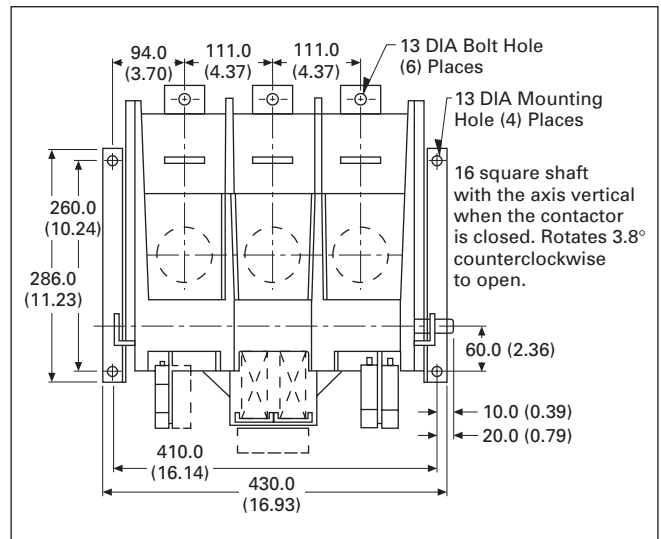


Figure 12. Top Dimensions 800 Amperes

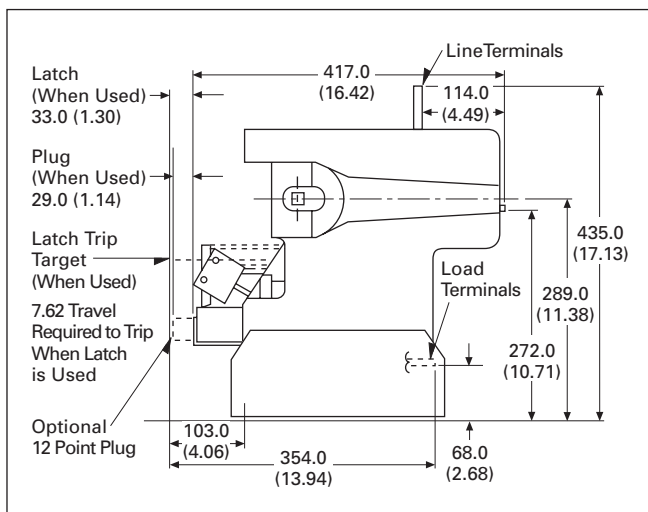
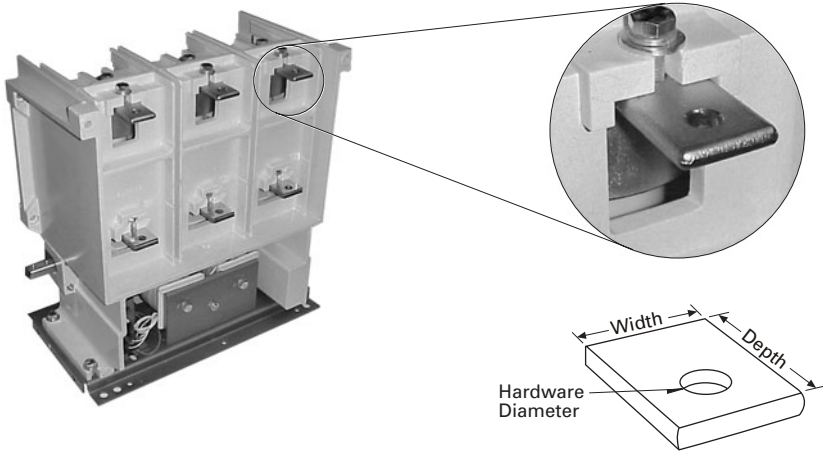


Figure 11. Side Dimensions 800 Amperes

May 2005

Lug Terminal



Lug Terminal

Table 22. Lug Terminal Dimensions in mm (Inches)

Contactor Ampere Rating	Width	Depth	Hardware (Bolt Diameter)
Upper Terminal			
160	19.1 (0.75)	33.3 (1.31)	10
200	25.4 (1.00)	33.3 (1.31)	10
360	25.4 (1.00)	33.3 (1.31)	10
400	25.4 (1.00)	33.3 (1.31)	10
800	44.5 (1.75)	50.8 (2.00)	10
Lower Terminal			
160	31.8 (1.25)	27.9 (1.10)	10
200	31.8 (1.25)	27.9 (1.10)	10
360	31.8 (1.25)	27.9 (1.10)	10
400	31.8 (1.25)	27.9 (1.10)	10
800	38.1 (1.50)	38.1 (1.50)	10

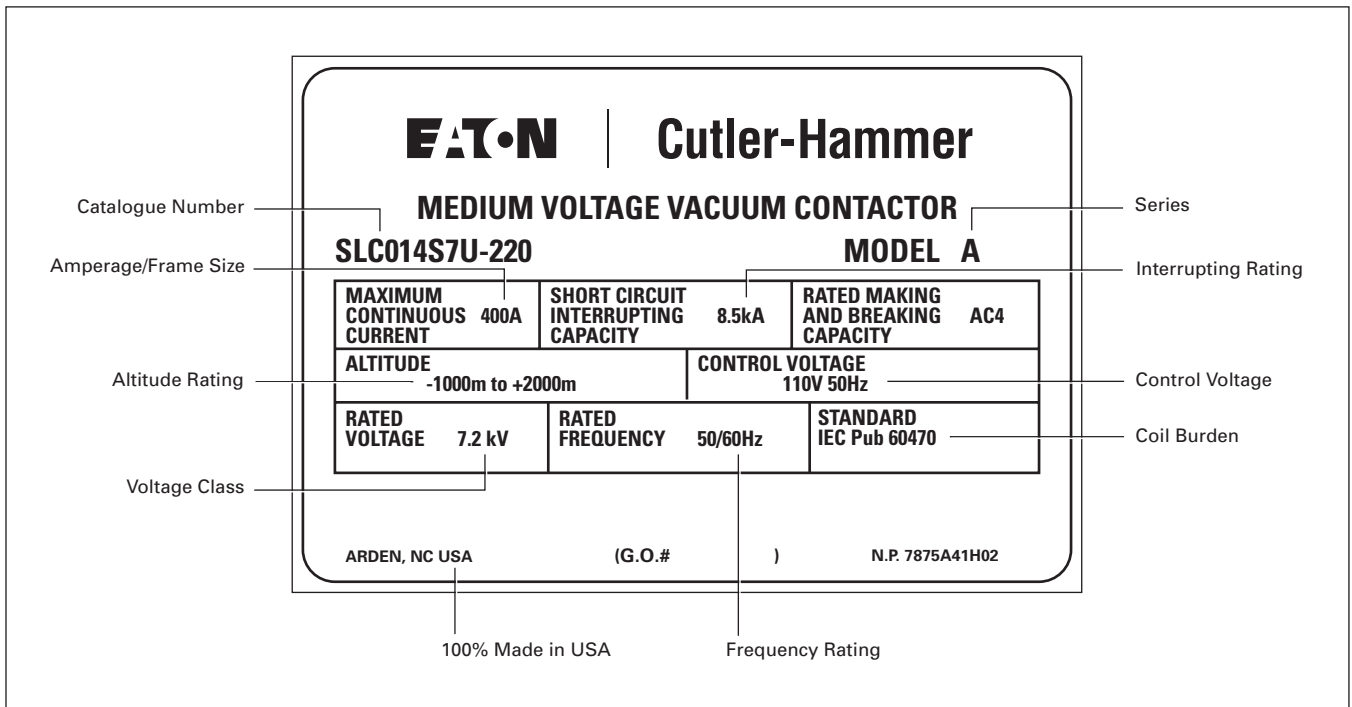


Figure 13. Contactor Label

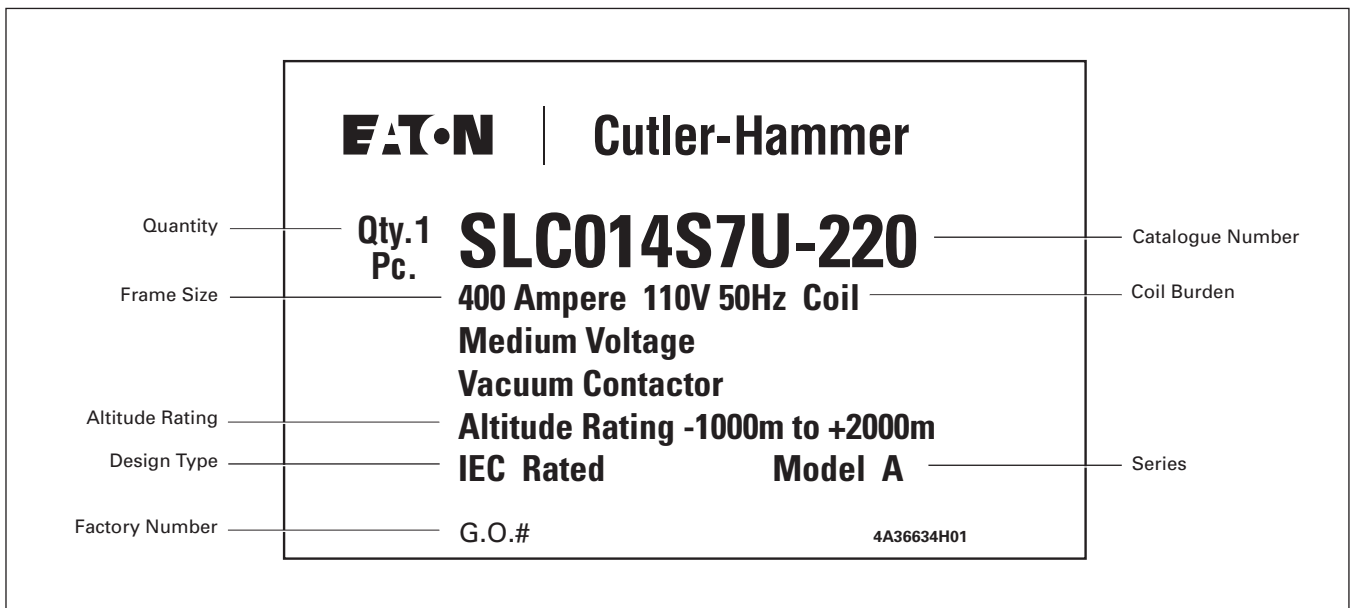


Figure 14. Carton Label

Eaton's electrical business is a global leader in electrical control, power distribution, and industrial automation products and services. Through advanced product development, world-class manufacturing methods, and global engineering services and support, Eaton's electrical business provides customer-driven solutions under brand names such as Cutler-Hammer®, Powerware®, Durant®, Heinemann®, Holec® and MEM®, which globally serve the changing needs of the industrial, utility, light commercial, residential, and OEM markets. For more information, visit www.EatonElectrical.com.

Eaton Corporation is a diversified industrial manufacturer with 2004 sales of \$9.8 billion. Eaton is a global leader in electrical systems and components for power quality, distribution and control; fluid power systems and services for industrial, mobile and aircraft equipment; intelligent truck drivetrain systems for safety and fuel economy; and automotive engine air management systems, powertrain solutions and specialty controls for performance, fuel economy and safety. Eaton has 56,000 employees and sells products to customers in more than 125 countries. For more information, visit www.eaton.com.

Eaton Electrical Inc.
1000 Cherrington Parkway
Moon Township, PA 15108
United States
tel: 1-800-525-2000
www.EatonElectrical.com

CSA is a registered trademark of the Canadian Standards Association. Cutler-Hammer is a federally registered trademark of Eaton Corporation. NEMA is the registered trademark and service mark of the National Electrical Manufacturers Association. UL is a federally registered trademark of Underwriters Laboratories Inc.

EATON

Cutler-Hammer

© 2005 Eaton Corporation
All Rights Reserved
Printed in USA
Form No. PG02000001U / Z3427
May 2005