

## automated control

# Low & Medium Voltage





**CV** Series

Joslyn Clark's Compact CV Series Vacuum Contactors and Starters are ideal for tough industrial applications. The compact design provides flexibility for retrofitting air break contactors, thus enabling an existing application to continue with maintenance cost and down time eliminated.

These compact CV Series Contactors and Starters are suitable for worldwide applications and for use with all types of motors including high efficiency IEC and NEMA design E motors.

The CV Series are easily interchangeable with NEMA Air Break contactors & starters. This series also features a simplified DC magnet system with range rated economized coils for improved reliability.

International Ratings For Global Applications UL508 Listed | CSA22.2 certified | NEMA ICS-2 | IEC 947-4.1

Mechanically Interlocked versions are available for reversing applications.





- Front Accessible
- Long Mechanical & Electrical Life
- Mounts in any plane
- Class 20 Bi-metallic overload relays
- Quiet, Rugged Design Standard with On/OFF Indicator
- Compact, Lightweight
- Side mounted auxiliary contacts



**CV Series** 



### **NEMA Size 4 Specifications**

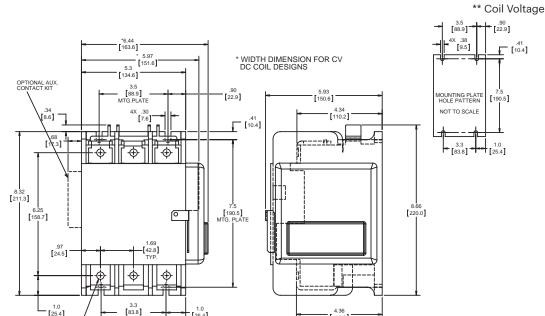
Recommended Control Transformer

6X 3/8-16 UNF-2B

Rated Frequency 50-400Hz  Making Current 2,000A  Breaking Current 1,600A  Dielectric Strength / B.I.L. 6,000V (1 Minute per Interrupter)  Interupting Current 2,200A  Short Time Withstand Current (50ms) 10,000A  Short Time Current (1s) 5,000A  Short Time Current (10s) 1,600A  Mechanical Life - No Load 1,200,000 cycles  Electrical Life at Rated Current (AC3 Duty Cycles) 5,000A  Switching Frequency 600 cycles per hour 0.9A  Operating Range at Rated Voltage -15% +10%  Closing Power / Duration 1,200Ms  Average Opening Time 120ms  Average Closing Time 20-40ms	Catalog Numbers <sup>1</sup>	CV77U030406-** CV77U032006-** CV77031615-**		CV77031615-**
Rated Insulating & Operating Voltage         600V         1,000V         1,500V           Rated Operating Current - AC1         135A         200A         200A           Rated Operating Power - AC3         100HP 460/575V         250HP 185KW-660V         500HP 370KW-1,500V           Rated Operating Power - AC4         60HP 460/575V         175HP 130KW-660V         315HP 235KW-1,500V           Rated Frequency         50-400Hz         315HP 235KW-1,500V           Making Current         2,000A         2,000A           Breaking Current         1,600A         1,600A           Dielectric Strength / B.I.L.         6,000V (1 Minute per Interrupter)           Interupting Current         2,200A           Short Time Withstand Current (50ms)         10,000A           Short Time Current (10s)         1,600A           Mechanical Life - No Load         1,200,000 cycles           Electrical Life at Rated Current (AC3 Duty Cycles)         1,000,000 cycles           Switching Frequency         600 cycles per hour           Chopping Current         0.9A           Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         20-40ms				
Rated Operating Current - AC1         135A         200A         200A           Rated Operating Power - AC3         100HP 460/575V         250HP 185KW-660V         500HP 370KW-1,500V           Rated Operating Power - AC4         60HP 460/575V         175HP 130KW-660V         315HP 235KW-1,500V           Rated Frequency         50-400Hz         315HP 235KW-1,500V           Making Current         2,000A         315HP 235KW-1,500V           Breaking Current         1,600A         315HP 235KW-1,500V           Breaking Current         2,000A         315HP 235KW-1,500V           Breaking Current         1,600A         315HP 235KW-1,500V           Breaking Current         1,600A         315HP 235KW-1,500V           Breaking Current         1,600A         315HP 235KW-1,500V           Breaking Current         1,000A         315HP 235KW-1,500V           Short Time Current (1s)         10,000A         315HP 235KW-1,500V           Short Time Current (10s)         1,600A         31,000A         31,000A           Mechanical Life - No Load         1,200,000 cycles         31,200,000 cycles         31,200,000 cycles           Electrical Life at Rated Current (AC3 Duty Cycles)         31,000,000 cycles         31,200,000 cycles         31,200,000 cycles           Switching Frequency         600 cy	Power Ratings Enclosed			
Rated Operating Power - AC3         100HP 460/575V         250HP 185KW-660V         500HP 370KW-1,500V           Rated Operating Power - AC4         60HP 460/575V         175HP 130KW-660V         315HP 235KW-1,500V           Rated Frequency         50-400Hz           Making Current         2,000A           Breaking Current         1,600A           Dielectric Strength / B.I.L.         6,000V (1 Minute per Interrupter)           Interupting Current         2,200A           Short Time Withstand Current (50ms)         10,000A           Short Time Current (10s)         5,000A           Short Time Current (10s)         1,600A           Mechanical Life - No Load         1,200,000 cycles           Electrical Life at Rated Current         1,000,000 cycles           (AC3 Duty Cycles)         600 cycles per hour           Chopping Current         0.9A           Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         20-40ms	Rated Insulating & Operating Voltage	600V	1,000V	1,500V
Rated Operating Power - AC4         60HP 460/575V         175HP 130KW-660V         315HP 235KW-1,500V           Rated Frequency         50-400Hz           Making Current         2,000A           Breaking Current         1,600A           Dielectric Strength / B.I.L.         6,000V (1 Minute per Interrupter)           Interupting Current         2,200A           Short Time Withstand Current (50ms)         10,000A           Short Time Current (1s)         5,000A           Short Time Current (10s)         1,600A           Mechanical Life - No Load         1,200,000 cycles           Electrical Life at Rated Current (AC3 Duty Cycles)         600 cycles per hour           Switching Frequency         600 cycles per hour           Chopping Current         0.9A           Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         20-40ms	Rated Operating Current - AC1	135A	200A	200A
Rated Frequency  Making Current  Dielectric Strength / B.I.L.  Interupting Current  Short Time Withstand Current (50ms)  Short Time Current (1s)  Short Time Current (10s)  Mechanical Life - No Load  Electrical Life at Rated Current (AC3 Duty Cycles)  Switching Frequency  Chopping Current  Operating Range at Rated Voltage  Closing Power / Duration  Holding Power  Average Opening Time  Average Closing Time	Rated Operating Power - AC3	100HP 460/575V 250HP 185KW-660V 500HP 370KW-1,500V		
Making Current Breaking Current 1,600A Dielectric Strength / B.I.L. Interupting Current 2,200A Short Time Withstand Current (50ms) Short Time Current (1s) Short Time Current (10s) Short Time Current (10s) Short Time Current (10s) T,600A Mechanical Life - No Load Electrical Life at Rated Current (AC3 Duty Cycles) Switching Frequency Chopping Current Operating Range at Rated Voltage Closing Power / Duration Holding Power Average Opening Time Average Closing Time  1,600A 1,000,000 1,2000A 1,2000A 1,200,000 1,200,0	Rated Operating Power - AC4	60HP 460/575V 175HP 130KW-660V 315HP 235KW-1,500\		315HP 235KW-1,500V
Breaking Current Dielectric Strength / B.I.L. Dielectric Strength / B.I.L.  Interupting Current Short Time Withstand Current (50ms) Short Time Current (1s) Short Time Current (1os) Short Time Current (10s) Short Time Current (10s) Mechanical Life - No Load I,200,000 cycles Electrical Life at Rated Current (AC3 Duty Cycles) Switching Frequency Chopping Current Operating Range at Rated Voltage Closing Power / Duration Holding Power Average Opening Time Average Closing Time  1,600A 1,00000A 1,0000A 1,000A 1,200,000 1,200,00	Rated Frequency		50-400Hz	
Dielectric Strength / B.I.L.  Interupting Current  Short Time Withstand Current (50ms)  Short Time Current (1s)  Short Time Current (1os)  Short Time Current (10s)  Short Time Current (10s)  Mechanical Life - No Load  Electrical Life at Rated Current  (AC3 Duty Cycles)  Switching Frequency  Chopping Current  Operating Range at Rated Voltage  Closing Power / Duration  Holding Power  Average Opening Time  Average Closing Time  6,000V (1 Minute per Interrupter)  1,000A  6,000V (1 Minute per Interrupter)  1,000A  6,000V (1 Minute per Interrupter)  1,000A  5,000A  1,200A  1,200,000 cycles  600 cycles per hour  0.9A  0.9A  1,200VA   20 ms Duration  1,200VA   20 ms Duration  120ms  Average Closing Time	Making Current		2,000A	
Interupting Current         2,200A           Short Time Withstand Current (50ms)         10,000A           Short Time Current (1s)         5,000A           Short Time Current (10s)         1,600A           Mechanical Life - No Load         1,200,000 cycles           Electrical Life at Rated Current (AC3 Duty Cycles)         1,000,000 cycles           Switching Frequency         600 cycles per hour           Chopping Current         0.9A           Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         120ms           Average Closing Time         20-40ms	Breaking Current		1,600A	
Short Time Withstand Current (50ms)         10,000A           Short Time Current (1s)         5,000A           Short Time Current (10s)         1,600A           Mechanical Life - No Load         1,200,000 cycles           Electrical Life at Rated Current (AC3 Duty Cycles)         1,000,000 cycles           Switching Frequency         600 cycles per hour           Chopping Current         0.9A           Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         120ms           Average Closing Time         20-40ms	Dielectric Strength / B.I.L.	6,000V (1 Minute per Interrupter)		
Short Time Current (1s)         5,000A           Short Time Current (10s)         1,600A           Mechanical Life - No Load         1,200,000 cycles           Electrical Life at Rated Current (AC3 Duty Cycles)         1,000,000 cycles           Switching Frequency         600 cycles per hour           Chopping Current         0.9A           Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         120ms           Average Closing Time         20-40ms		2,200A		
Short Time Current (10s)         1,600A           Mechanical Life - No Load         1,200,000 cycles           Electrical Life at Rated Current (AC3 Duty Cycles)         1,000,000 cycles           Switching Frequency         600 cycles per hour           Chopping Current         0.9A           Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         120ms           Average Closing Time         20-40ms	Short Time Withstand Current (50ms)			
Mechanical Life - No Load  Electrical Life at Rated Current (AC3 Duty Cycles)  Switching Frequency  Chopping Current  Operating Range at Rated Voltage  Closing Power / Duration  Holding Power  Average Opening Time  1,200,000 cycles  1,000,000 cycles  600 cycles per hour  0.9A  0.9A  -15% +10%  1,200VA   20 ms Duration  12VA  Average Opening Time  120ms  Average Closing Time  20-40ms	Short Time Current (1s)		5,000A	
Electrical Life at Rated Current       1,000,000 cycles         (AC3 Duty Cycles)       600 cycles per hour         Switching Frequency       600 cycles per hour         Chopping Current       0.9A         Operating Range at Rated Voltage       -15% +10%         Closing Power / Duration       1,200VA   20 ms Duration         Holding Power       12VA         Average Opening Time       120ms         Average Closing Time       20-40ms	Short Time Current (10s)		1,600A	
(AC3 Duty Cycles)       1,000,000 cycles         Switching Frequency       600 cycles per hour         Chopping Current       0.9A         Operating Range at Rated Voltage       -15% +10%         Closing Power / Duration       1,200VA   20 ms Duration         Holding Power       12VA         Average Opening Time       120ms         Average Closing Time       20-40ms	Mechanical Life - No Load		1,200,000 cycles	
(AC3 Duty Cycles)         600 cycles per hour           Switching Frequency         600 cycles per hour           Chopping Current         0.9A           Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         120ms           Average Closing Time         20-40ms	Electrical Life at Rated Current		1000000 avalor	
Chopping Current         0.9A           Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         120ms           Average Closing Time         20-40ms		, · · · · · · · · · · · · · · · · · · ·		
Operating Range at Rated Voltage         -15% +10%           Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         120ms           Average Closing Time         20-40ms		600 cycles per hour		
Closing Power / Duration         1,200VA   20 ms Duration           Holding Power         12VA           Average Opening Time         120ms           Average Closing Time         20-40ms	Chopping Current	0.9A		
Holding Power         12VA           Average Opening Time         120ms           Average Closing Time         20-40ms	Operating Range at Rated Voltage	-15% +10%		
Average Opening Time 120ms Average Closing Time 20-40ms	Closing Power / Duration	1,200VA   20 ms Duration		
Average Closing Time 20-40ms	Holding Power	12VA		
	Average Opening Time	120ms		
Average Pick-I In at Rated Voltage <85%	Average Closing Time	20-40ms		
Average Flok op at Nated Voltage	Average Pick-Up at Rated Voltage	≤85%		
Average Drop-Out at Rated Voltage ≤70%	Average Drop-Out at Rated Voltage	≤70%		

Application Ratings	
Mounting Installation	All Planes (Contactor only)
Altitude	Up to 6600 ft. (2000 m)
Operating Temperature Range	-40°F (-40°C) +122°F (50°C)
Vibration / Shock	40Hz - 2G. / 30G.
Weight	21 lbs. (9.53 kg)
Auxiliary Contacts	1 N.C. & 1 N.O. (standard): 3 N.C. & 3 N.O. (optional)

400VA Machine Tool Transformer; 5% Regulation at 20%pf



1. ALL DIMENSIONS IN INCHES [mm]

#### Coil Voltages

Suffix	Coil Voltage
-76	110/120VAC 50/60Hz
-26	220/240VAC 50/60Hz
-125	125VDC
-150	250VDC
-130	230 V D C

#### Motor HP/KW AC3<sup>2</sup>

Voltage	135A	200A
200/208V	40/30	60/45
220/240V	50/37	75/56
380/415V	75/56	125/93
440V	100/75	125/93
460/480V	100/75	150/112
575V	125/93	150/112
600V	125/93	200/149
660/690V	-	200/149
1,000V	-	300/224
1,500V	-	500/373

#### Three Phase Transformer Load KVA

Voltage	135A	200A
200/208V	44/46	66/68
220/240V	49/53	72/79
380/415V	84/92	125/137
440V	98	145
460/480V	102/107	151/158
575V	128	189
600V	133	197
660/690V	-	217/227
1,000V	-	329
1,500V	-	494

Three Phase Transformer Load KVAR

Voltage	150A	200A
208V	40	54
220/240V	43	62
380/400V	74	104
415/440V	81	114
460V	90	127
575/600V	115	156
1,000V	195	260
1,500V	292	390

#### NOTES:

- <sup>1</sup>Consult factory for certifications and approvals.
- <sup>2</sup> Suitable for use on a circuit capable of delivering not more than 10,000 rms. symmetrical amperes.



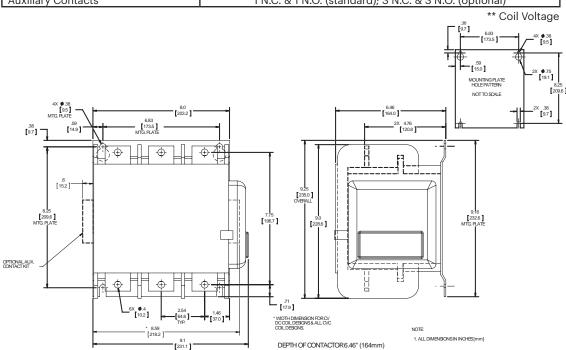
**CV Series** 

### **NEMA Size 5 Specifications**

	Catalog Numbers <sup>1</sup>	CV77U030506-**	CV77U034A06-**	CV77034A15-**
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Power Ratings Enclosed	0001/	1,000	1.500\/
Rated Insulating & Operating Voltage	600V	1,000V	1,500V
Rated Operating Current - AC1	270A	400A	400A
Rated Operating Power - AC3	200HP 460KW/575V	500HP 370KW-660V	850HP 650KW-1500V
Rated Operating Power - AC4	120HP 460KW/575V	300HP 260KW-660V	315HP 570KW-1500V
Rated Frequency		50-400Hz	
Making Current		4,000A	
Breaking Current		3,200A	
Dielectric Strength / B.I.L.	6,00	OV (1 Minute per Interru	pter)
Interupting Current		4,600A	
Short Time Withstand Current (50ms)	18,000A		
Short Time Current (1s)	7,000A		
Short Time Current (10s)	3,200A		
Mechanical Life (No Load)		1,200,000 cycles	
Electrical Life at Rated Current		1,000,000 cycles	
(AC3 Duty)		1,000,000 cycles	
Switching Frequency	600 cycles per hour		
Chopping Current	0.9A		
Operating Range at Rated Voltage	-15% +10%		
Closing Power / Duration	1200VA   20ms		
Holding Power	10-12VA		
Average Opening Time	120ms		
Average Closing Time	20-40ms		
Average Pick-Up at Rated Voltage	≤85%		
Average Drop-Out at Rated Voltage	≤70%		
Recommended Control Transformer	500VA Machine Tool Transformer; 5% Regulation at 20%pf		

Application Ratings	
Mounting Installation	All Planes (Contactor only)
Altitude	Up to 6,600 feet (2,000 m)
Operating Temperature Range	-40°F (-40°C) +122°F (50°C)
Vibration / Shock	40Hz - 2G. / 30G.
Weight	30 lbs. (13.61 kg)
Auxiliary Contacts	1 N.C. & 1 N.O. (standard); 3 N.C. & 3 N.O. (optional)



#### Coil Voltages

Suffix	Coil Voltage
-76	110/120VAC 50/60Hz
-26	220/240VAC 50/60Hz
-125	125VDC
-150	250VDC

#### Motor HP/KW AC3

Voltage	270A	400A
200/208V	75/56	125/93
220/240V	100/75	150/112
380/415V	150/112	250/187
440V	200/149	250/187
460/480V	200/149	300/224
575V	250/187	350/261
600V	200/187	400/298
660/690V	-	450/336
1,000V	-	650485
1,500V	-	1,000/746

Three Phase Transformer Load KVA

Voltage	270A	400A
200/208V	89/92	132/137
220/240V	98/107	145/158
380/415V	169/184	250/273
440V	195	290
460/480V	204/213	303/316
575V	255	378
600V	267	395
660/690V	-	434/454
1,000V	-	658
1,500V	-	987

Three Phase Transformer Load KVAR

Voltage	270A	400A
200/208V	66/68	98/102
220/240V	72/80	108/118
380/415V	126/138	186/204
440V	146	216
460/480V	152/160	226/236
575V	190	282
600V	200	296
660/690V	-	324/340
1,000V	-	492
1,500V	-	740

#### NOTES

<sup>1</sup>Consult factory for certifications and approvals.

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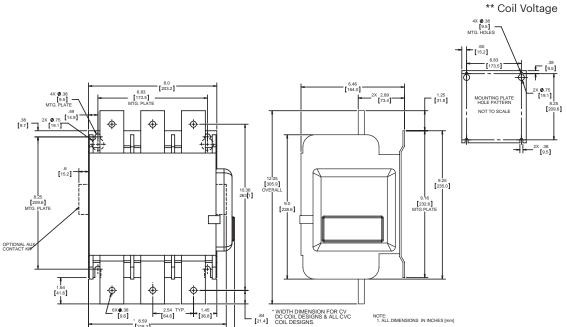
**CV Series** 



### **NEMA Size 6 Specifications**

Catalog Numbers <sup>1</sup>	CV77U030606-**	CV77U036A06-**	CV77036A15-**
Power Ratings Enclosed			
Rated Insulating & Operating Voltage	600V	1,000V	1,500V
Rated Operating Current - AC1	540A	600A	600A
Rated Operating Power - AC3	400HP 460/575V	750 HP 550KW-660V	500HP 900KW-1,500V
Rated Operating Power - AC4	250HP 460/575V	525 HP 390KW-660V	950HP 700KW-1,500V
Rated Frequency		50-400Hz	
Making Current		6,000A	
Breaking Current		4,800A	
Dielectric Strength / B.I.L.	6,00	OOV (1 Minute per Interru	pter)
Interupting Current		6,000A	
Short Time Withstand Current (50ms)		30,000A	
Short Time Current (1s)	9,000A		
Short Time Current (10s)	4,800A		
Mechanical Life (No Load)	750,000 cycles		
Electrical Life at Rated Current (AC3 Duty)	500,000 cycles		
Switching Frequency	300 cycles per hour		
Chopping Current	0.9A		
Operating Range at Rated Voltage	-15% +10%		
Closing Power / Duration	1600VA   20ms		
Holding Power	10-12.5VA		
Average Opening Time	160ms		
Average Closing Time	20-40ms		
Average Pick-Up at Rated Voltage	≤85%		
Average Drop-Out at Rated Voltage	≤70%		
Recommended Control Transformer	500VA Machine Tool Transformer: 5% Regulation at 20%pf		

Application Ratings	
Mounting Installation	All Planes (Contactor only)
Altitude	Up to 6,600 ft. (2,000 m)
Operating Temperature Range	-40°F (-40°C) +122°F (50°C)
Vibration / Shock	40Hz - 2G. / 30G.
Weight	33 lbs. (14.97 kg)
Auxiliary Contacts	1 N.C. & 1 N.O. (standard); 3 N.C. & 3 N.O. (optional)



#### Coil Voltages

Suffix	Coil Voltage
-76	110/120VAC 50/60Hz
-26	220/240VAC 50/60Hz
-125	125VDC
-150	250VDC

#### Motor HP/KW AC3

Voltage	540A	600A
200/208V	150/112	200/149
220/240V	200/149	200/149
380/415V	300/224	350/261
440V	350/261	400/298
460/480V	400/298	450/336
575V	500/373	550/40
600V	500/373	600/448
660/690V	-	650/485
1,000V	-	1,000/746
1,500V	-	1,500/1119

#### Three Phase Transformer Load KVA

Voltage	540A	600A
200/208V	178/185	197/205
220/240V	195/213	217/237
380/415V	338/369	375/410
440V	391	434
460/480V	409/426	454/474
575V	511	568
600V	533	592
660/690V	-	652/681
1,000V	-	987
1,500V	-	1,481

Three Phase Transformer Load KVAR

Voltage	540A	600A
200/208V	132/136	147/153
220/240V	144/160	162/177
380/415V	252/276	279/306
440V	292	324
460/480V	304/320	339/354
575V	380	423
600V	400	444
660/690V	-	486/510
1,000V	-	734
1,500V	-	1,110

<sup>&</sup>lt;sup>1</sup>Consult factory for certifications and approvals.



### **HEAVY DUTY VACUUM CONTACTOR**

1140 Series

As one of the most demanding industries for rugged duty, mining equipment requires reliable power switching and motor-starting solutions to ensure dependable productivity in harsh environments. Joslyn Clark vacuum contactors are recognized by the leading coal-mine machine builders for applications on longwall mining equipment, continuous miners, conveyors, power centers and other related equipment.

We developed the 1,140 Volt Vacuum Contactor Series, to meet the specific needs of our partners in the mining industry. In addition to meeting those power requirements, the new vacuum contactor offers several other benefits. For an industry in which space is critical, the 1140 Series features the smallest footprint.

This rugged contactor can be mounted in any plane and is front accessible. It also features a long electrical life and the kind of durability and reliability you've come to expect from Joslyn Clark vacuum contactors. Whatever your requirements, Joslyn Clark has the contactor and motor-starting system solutions to meet your needs.

- Designed to Standards IEC 60947-4, CSA22.2 & UL508
- Heavy Duty Mining Design
- Standard contactor includes 2NO & 2NC Aux. Contacts
- Optional contactor includes 4NO & 4NC Aux. Contacts



- Visual ON/OFF indicator
- Visual wear indicator
- Line & Load Terminal Hex Bolts
- Mounts in any plane



### **HEAVY DUTY VACUUM CONTACTOR**

1140 Series



### **Specifications**

Catalog Numbers	CV77U033A12-**
Power Ratings Enclosed	
	4440)/
Rated Insulating & Operating Volt	1,140V
Rated Operating Current - AC1	AC1 330A at 40C; 300A at 60C
Rated Operating Power - AC3	428KW/1140V
Rated Operating Power - AC4	140KW/1140V
Rated impulse withstand voltage	8,000V
Rated Frequency	50-60Hz
Making Current	3,000A
Breaking Current	2,400A
Dielectric Strength / B.I.L.	6000V (1 Minute per Interrupter)
Interupting Current	3,000A
Short Time Withstand Current (50ms)	10,000A
Short Time Current (1s)	6,000A
Short Time Current (10s)	2,400A
Mechanical Life - No Load	1,200,000 cycles
Electrical Life at Rated Current (AC3 Duty Cycles)	1,000,000 cycles
Switching Frequency	600 cycles per hour
Operating Range at Rated Voltage	-30% + 25% at Range Voltage
Closing Power/Duration	1680VA <100ms
Holding Power	3.6VA
Average Opening Time	160 milliseconds
Average Closing Time	20-40 milliseconds
Average Pick-Up at Rated Voltage	≤75%
Average Drop-Out at Rated Voltage	≤70%

Application Ratings	
Mounting Installation	All Planes (Contactor only)
Altitude	Up to 6600 ft. (2000 m)
Operating Temperature	-13°F (-25°C) +140°F (60°C)
Vibration / Shock	10-50Hz - 2G/30G
Weight	17 lbs. (7.71 kg.)
Auxiliary Contacts	2 N O & 2 N C (standard): 4 N O & 4 N C (optional)

#### \*\* Coil Voltage

Coil	Voltages
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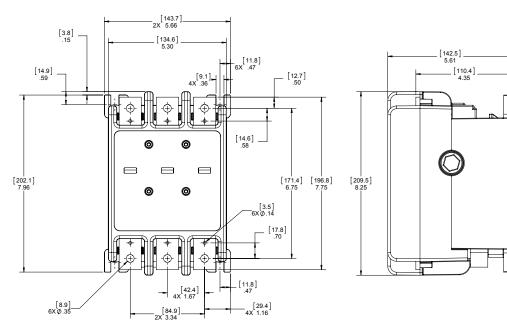
Suffix	Coil Voltage
-11	110VAC 50/60Hz
-22	220VAC 50/60Hz

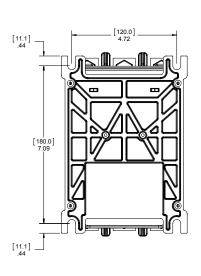
#### Motor HP/KW AC3

Voltage	300A
200/208V	100/75
220/240V	100/75
380/415V	150/112
440V	200/149
460/480V	200/149
575V	250/187
600V	300/224
660/690V	300/224
1,140V	500/373

#### NOTES:

<sup>1</sup>Suitable for use on a circuit capable of delivering not more than 10,000 rms. symmetrical amperes.







### LOW & MEDIUM VOLTAGE VACUUM CONTACTOR

**VC Series** 

The Joslyn Clark USAVAC low voltage vacuum contactors and starters are ideal for applications from 200V to 3,600V and motor ratings for 50 to 3700HP depending on voltage.

- 3600V, 3 Phase, 600A Vacuum Contactor Rated 2,400HP/2,300V and 3,700HP/3,300V
- 1,500V, 3 Phase, 320A Vacuum Reversing Contactor Rated 250HP/460V and 850HP/1,500V

VC Series Contactors and Starters incorporate many useful features to insure ease of maintenance, versatility, and reliability. The contactor can be assembled or dismantled without the use of any tools.

The control module contains the coil and auxiliary contacts wired to a terminal block and is easily removed for checking or immediate replacement. The phase assembly is a vacuum interrupter containing the power switching contacts.





- Front Accessible
- Mounts in any plane
- Tamper resistant, dust protected auxiliary contacts
- Quiet Operation
- Compact, Lightweight
- Self-adjusting power contacts
- Energy efficient control module
- Fully phase insulated
- Rugged modular construction



### LOW & MEDIUM VOLTAGE VACUUM CONTACTOR

**VC Series** 



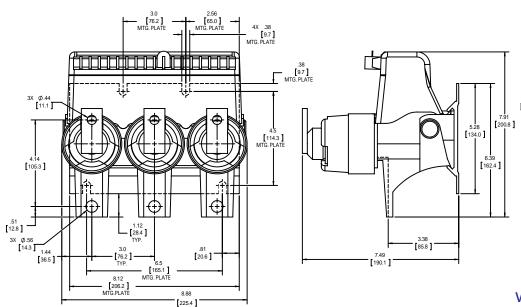
### **Specifications**

Catalog Numbers			
1,500V	VC77U03415-**	VC77U03515-**	VC77U03615-** <sup>2</sup>
3,600V	VC77U03436-**	VC77U03536-**	VC77U03636-** <sup>2</sup>

Power Ratings Enclosed				
Rated Insulating & Operating Voltage	1500V-3600V <sup>1</sup>			
Rated Operational Current	160A	320A	600A	
Rated Frequency		50-400Hz		
Making Current	1,600A	3,200A	6,000A	
Breaking Current	1,600A	3,200A	6,000A	
Dielectric Strength / B.I.L.	6,000V (1 min. per I	nterrupter); 4,500V (60	Oms per Interrupter)	
Interupting Current	4,400A	5,000A	6,000A	
Withstand Current		30,000A-3Hz.		
Short Time Current 1 Sec.	5,000A 7,000A 9,000A			
Short Time Current 2 Sec	2,000A	5,000A	7,000A	
Mechanical Life - No Load	2,000,000 cycles			
Electrical Life at Rated Current	1,000,000 cycles			
(AC3 Duty)		1,000,000 Cycles		
Switching Frequency		600 cycles per hour		
Chopping Current		0.9A		
Operating Range at Rated Voltage		+10% -25%		
Closing Power / Duration	950VA/17ms	950VA/17ms	1,900VA/17ms	
Holding Power	9VA	9VA	18VA	
Average Opening Time	90ms at 60Hz			
Average Closing Time	17ms at 60Hz			
Average Pick-Up at Rated Voltage	≤75%			
Average Drop-out at Rated Voltage		≤70%		
Recommended Control Transformer	r 250VA 250VA 500VA			

Application Ratings				
Mounting Installation	All Planes (Contactor only)			
Altitude	6600 ft. (2000 Meters)			
Operating Temperature Range	-40°F (-40°C) +122°F (50°C)			
Vibration / Shock	40Hz - 2G. / 30G.			
Weight	12 lbs. (5.45 kg) 12 lbs. (5.45 kg) 24 lbs. (11 kg)			
Auxiliary Contacts	2 sets of Form C Contacts <sup>4</sup>			

\*\* Coil Voltage



#### Coil Voltages

Suffix	Coil Voltage
-76	110/120VAC 50/60Hz
-26	220/240VAC 50/60Hz
-125	125VDC
-150	250VDC

#### Motor HP/KW AC3

Voltage	160A	320A	600A
230V	60	125	200
460V	125	250	400
1,000V	250	500	1000
1,500V	400	800	1500
2,300V	600	1200	2250
3,300V	800	1750	3175

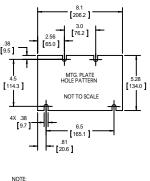
Three Phase Transformer Load KVA

Voltage	160A	320A	600A
230V	60	120	225
460V	120	225	450
1,000V	250	500	975
1,500V	375	750	1450
2,300V	600	1200	2250
3,300V	850	1700	3250

Three Phase Transformer Load KVAR

Voltage	Voltage 160A 320A		600A
230V	45	90	170
460V	90	180	340
1,000V	195	390	720
1,500V	290	580	1050
2,300V	435	870	1650
3,300V	625	1250	2350

- <sup>1</sup> 3600V Model has a B.I.L. rating of 45 kV and an interrupt rating of 4000A.
- <sup>2</sup> Contact factory for dimensions and outline drawings.
- <sup>3</sup> Consult factory for certifications and approvals.
- <sup>4</sup> Excluding DC Coil Voltages



1. ALL DIMENSIONS IN INCHES [mm]



### MEDIUM VOLTAGE VACUUM CONTACTOR

**MVC Series** 

The Joslyn Clark USAVAC medium voltage vacuum contactors are ideal for applications for 2300V to 7200V. Current ratings of 200-1200 ampere, and motor ratings up to 7000 HP at 6600V are available.

- 7200V, 600 Ampere, 3 phase vacuum contactor with In-Line Power Terminals
- 400 Ampere, 3 phase vacuum contactor with alternative line terminal position enabling line andload termination to be on same side of contactor. Ideal for dropout starter designs. Can be easily converted.

The MVC Series Medium Voltage Vacuum Contactors offer many unique features to create easy maintenance, dependability and versatility. The modular design allows for a simplified assembly and easy inspection, utilizing minimum parts.

The control module contains the coil and auxiliary contacts, which can easily be removed for inspection or replacement.



- Front Accessible
- Panel mount or table mount
- Field selectable power terminals
- Full phase insulated, B.I.L. 60kV

- Rugged design
- · Compact, Lightweight
- Low Maintenance
- Self-adjusting power contacts



### MEDIUM VOLTAGE VACUUM CONTACTOR

**MVC Series** 



### **Specifications**

Catalog Numbers 1, 2			
2,500V	MVC77U032A25-**	MVC77U034A25-**	MVC77U036A25-**
5,000V	MVC77U032A50-**	MVC77U034A50-**	MVC77U036A50-**
7,200V	MVC77U032A72-**	MVC77U034A72-**	MVC77U036A72-**

Power Ratings Enclosed			
Rated Operational Current	200A	400A	600A
Rated Frequency		50/60Hz	
E1 Interrupt Rating	2,500V	- 20 MVA equivilent to	4.62KA
MVA & KA Values	· ·	<ul> <li>40 MVA equivilent to</li> </ul>	
Contactor Only	7,200V	- 60 MVA equivilent to	4.62KA
E2 Fuse Coordination (5000V)	400 MVA 4	45.7 KA RMS (38R max	. fuse size)
Peak Withstand Current (5000V)	57.8 KA - Peak (38R ı	max. fuse size); 50 KA	(24R max. fuse size)
Short Time Current (1s)	6,000A	7,000A	9,000A
Short Time Current (5s)	4,000A	5,000A	6,000A
Short Time Current (15s)	2,000A	2,600A	3,000A
Switching Frequency	300 cycles per hour		
Elec. Life at Rated Current	600,000 cycles	400,000 cycles	250,000 cycles
Mechanical Life - No Load		750,000 cycles	
Dielectric Strength / B.I.L.	20,00	00V (1 min. per Interru	ıpter)
	60,00	00V (60ms per Interru	ipter)
Chop Current Max		0.9A	
Operating Range at Rated Voltage		+10% -15%	
Closing Power VA/Duration		650VA / 45ms	
Holding Power		7VAC / 0.47VDC	
Average Opening Time	90ms		
Average Closing Time	40ms		
Average Pick-Up at Rated Voltage	≤85%		
Average Drop-out at Rated Voltage	≥ ≤70%		
Recommended Control Transformer	300VA 600VA		

Application Ratings	
Mounting Installation	All Planes (Contactor only)
Altitude	6600 ft. (2000 Meters)
Operating Temperature Range	32°F (0°C) +134°F (57°C)
Vibration / Shock	40Hz - 2G. / 30G.
Weight	56 lbs. (25.4 kg)
Auxiliary Contacts	2 N.O. & 2 N.C. (standard); 4 N.O. & 4 N.C. (optional) <sup>3</sup>

#### Coil Voltages

Suffix	Coil Voltage
-76	110/120VAC 50/60Hz
-26	220/240VAC 50/60Hz
-125	125VDC
-150	250VDC

#### Motor HP/KW AC3

Voltage	Power Factor	200A	400A	600A
2,500V	0.8	800	1,625	2,500
2,500V	1.0	1,000	2,000	3,000
3,300V	0.8	1,050	2,125	3,175
3,300V	1.0	1,350	2,750	4,000
4,160V	0.8	1,350	2,750	4,000
4,160V	1.0	1,625	3,350	5,000
6,600V	0.8	2,125	4,250	6,000
6,600V	1.0	2,750	5,500	8,000

#### Transformer Load KVA

Voltage	200A	400A	600A
2,500V	800	1,600	2,400
3,300V	1,000	2,100	3,200
4,160V	1,350	2,700	4,100
6,600V	2,100	4,300	6,500

#### Transformer Load KVA

A
0
0
0
0

#### NOTES:

- <sup>1</sup> Consult factory for 2, 4, 5 Pole Contactors, and Mechanically Interlocked Contactors.
- <sup>2</sup> Consult factory for certifications and approvals.<sup>3</sup> Excludes DC Voltages.

<sup>\*\*</sup> Coil Voltage 10.0 - [254.0] MTG. PLATE 1.76 - [44.8] MTG. PLATE 12.68 [322.1] 4X .38 [9.5 ] MTG. PLATE .50 [12.7] MTG. PLATE .50 [12.7] [131.7] MOUNTING PLATE HOLE PATTERN [228.6] NOT TO SCALE [174.5] [228.6] MTG. PLATE [254.0 ] MTG. PLATE 11.53 [ 292.8 ] Ф 3X **Ø**.59 [15.1] 1.23 [31.2] 1.76 [44.8] [302.9] 127.0 13.52 - [343.5] MTG. PLATE 1. ALL DIMENSIONS IN INCHES [mm] www.joslynclark.com | 11 14.5



### SPECIAL PURPOSE VACUUM CONTACTOR

**SVC Series** 

Joslyn Clark is recognized as the premier supplier of vacuum contactors by the leading switchgear and Variable Frequency Drive manufacturers.

The 12kV 630 Amp Vacuum Contactor provides long service life and a wide voltage range to effectively control high voltage motors, transformers and reactive compensation capacitors, and other heavy duty equipment.

The 12kV Series features an anti-surge impulse for single or back-to-back capacitor switching for improved operation.

This series delivers the reliability and the ruggedness needed for demanding industries, including metallurgy, mining, electrical, petro-chemical, and ports.

Designed to Standards IEC 60470 | GB/T 14808 | GB 11022

- · High Current Capacity
- 3-Phase synchronization ≤2ms



- · Long product life
- · Mechanically latched, electriclly held



### SPECIAL PURPOSE VACUUM CONTACTOR

**SVC Series** 



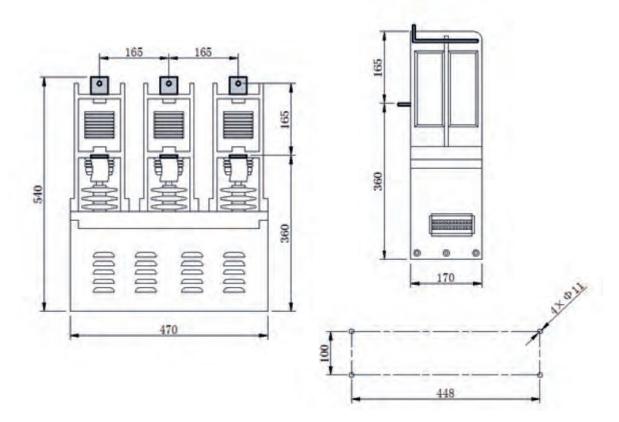
### **Specifications**

Catalog Numbers	SVC77U034A120-**	SVC77U036120-**	
Power Ratings Enclosed			
Rated Insulating & Operating Voltage	12,0	00V	
Rated Operational Current	400A	630A	
Rated Frequency	50-60Hz		

Power Ratings Enclosed			
Rated Insulating & Operating Voltage	12,000V		
Rated Operational Current	400A	630A	
Rated Frequency	50-60	OHz	
Making Current	4,000A	6,300A	
Breaking Current	3,200A	5,040A	
Dielectric Strength / B.I.L.	4,200V (1 minute	per interrupter)	
Short Time Withstand Current (4s)	4,000A	6,300A	
Single Capacitor Switching Capacity	3,500 KVAR		
Impulse Withstand Voltage Uimp	75,000V		
Mechanical Life - No Load	1,000,000 cycles		
Electrical Life at Rated Current	250,000 cycles		
(AC3 Duty)	250,000 cycles		
Switching Frequency	300 cycles per hour		
Operating Range at Rated Voltage	+10% -	20%	
Average Opening Time	≤80ms		
Average Closing Time	≤80ms		
Average Drop-out at Rated Voltage	≤50%		
3-Phase Synchronization	≤2ms		
Contact Bouncing Time	≤2ms		

Application Ratings	
Altitude	Up to 6,500 ft. (1,981 m)
Operating Temperature Range	5°F (-15°C) +104°F (40°C)
Relative Humidity	90% (at 77°F)
Weight	67 lbs. (30.39 kg)
Auxiliary Contacts	3 N.O. & 2 N.C. (standard); 4 N.O. & 4 N.C. (optional)

<sup>\*\*</sup> Coil Voltage



Coil Voltages

Suffix Coil Voltage 110VAC 50/60Hz -11 220VAC 50/60Hz -22 -110 110VDC



### SPECIAL PURPOSE VACUUM CONTACTOR

**SVC Series** 







**MVC Series Framework** 

Coil Voltages

Suffix

-76

-26

Coil Voltage

120VAC 50/60Hz

240VAC 50/60Hz

#### **VC Series Framework**

Voltage	1,500V Open Type	3,600V Open Type
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#### 1 Pole, Single Phase

Ampere Rating	Catalog Numbers		
450A	SVC77U014515-**	SVC77U014536-**	
1,000A	SVC77U011015-**	SVC77U011036-**	
1,500A	SVC77U011515-**	SVC77U011536-**	
2,500A	SVC77U012515-**	SVC77U012536-**	

#### 2 Pole, Single Phase

Ampere Rating	Catalog Numbers		
450A	SVC77U024515-**	SVC77U024536-**	
1,000A	SVC77U021015-**	SVC77U021036-**	
1,500A	SVC77U021515-**	SVC77U021536-**	

#### 3 Pole, Three Phase

Ampere Rating	Catalog Numbers	
1,000A	SVC77U031015-**	SVC77U031036-**

<sup>\*\*</sup> Coil Voltage

#### **MVC Series Framework**

Voltage 2,500V Open Type 5,000V Open Type 7,200V Open Type	Voltage	2,500V Open Type	5,000V Open Type	7,200V Open Type
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#### 1 Pole, Single Phase

Ampere Rating	Catalog Numbers		
1,000A	SVC77U011025-**	SVC77U011050-**	SVC77U011072-**
1,500A	SVC77U011525-**	SVC77U011550-**	SVC77U011572-**
2,000A	SVC77U012025-**	SVC77U012050-**	SVC77U012072-**
3,000A	SVC77U013025-**	SVC77U013050-**	SVC77U013072-**

#### 2 Pole, Single Phase

Ampere Rating		Catalog Numbers	
200A	SVC77U022A25-**	SVC77U022A50-**	SVC77U022A72-**
400A	SVC77U024A25-**	SVC77U024A50-**	SVC77U024A72-**
600A	SVC77U026A25-**	SVC77U026A50-**	SVC77U026A72-**
1,000A	SVC77U021025-**	SVC77U021050-**	SVC77U021072-**
1,500A	SVC77U021525-**	SVC77U021550-**	SVC77U021572-**

#### 3 Pole, Three Phase

Ampere Rating	Catalog Numbers		
800A	SVC77U038A25-**	SVC77U038A50-**	SVC77U038A72-**
1200A	SVC77U031225-**	SVC77U031250-**	SVC77U031272-**

\*\* Coil Voltage

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### JOSLYN CLARK VACUUM CONTACTORS



### **Advantages**

#### Long Mechanical Life

Up to 3 million operations at 30 operations per day. Life expectancy of approx. 274 years.

#### **Long Electrical Life**

Up to 1 million operations at 30 operations per day. Life expectancy of approx. 91 years.

#### **Low Maintenance**

No special maintenance skills or adjustments required

#### **Minimal Downtime**

Important in 24 hours operating processes

#### **Arc Containment**

No ironized gases reducing risk of flash ovens.

#### Weld Free

Minimal contact bounce, low arc energy and temperatures minimizes risks of contact welding

#### **Impervious to Environment**

Contacts sealed from atmospheric contamination such as H2S Chlorine, dust, salt atmospheres, etc.

#### **High Cycle Duty**

Up to 1200 operations/hour

#### Rugged, Compact, Quiet & Lightweight

Smaller, quieter than conventional air break contactors

#### Mount in any plane Simple Controls

Ideal for small tight packaging electrically held contactor circuit

#### **Industrial Users**

Petro Chemical plants and refineries

Petro Chemical transportation - pipelines

Saw Mills

Steel Mills

Water Sewage Treatment Plants

Solar Panels

**Electrical Utilities** 

Stone Crushing and Quarrying

Tire and Rubber Plants

Oil Pumping

Surface Mining Equipment

Induction Heating - Furnaces

Hazardous Area Flameproof Equipment

Crane Control Panel Builders

**Transfer Switches** 

Mining Shovels

Conveyors & Crushers **Wood Chippers** 

Tunnel Boring Machines

Petro Chemical exploration and pumping facilities

Paper Mills Textile Mills

Underground for Coal and Minerals Mining

Surface Mining for Coal and Minerals

Material Handling

Locomotive Transportation

Cement Plants

Water Pumping Irrigation

AC and DC Drives, Power Supplies & Traction

Underground Mining Equipment

Capacitor Switching - Power Factor Correction

Air Handling - Compressor Equipment

MCC Manufacturers Harmonic Filters

Lighting

Drag Lines Wind Turbines

**Bucket Wheel Excavators** 

Electronic Soft Starters



### A History of Setting the Standard by Which Others Are Measured

As the world leader in vacuum contactors and starters, we are dedicated to continually raising the bar for industry standards of in life safety.

Dating back to the 1920's, Joslyn Clark began as the Clark Controller Company. Instantly recognized as a pioneer of innovation and quality, Clark products were recognized for their advanced design and reliability. Although our name has changed through the years, our commitment to excellence, unrivaled safety and reliability has not.

We currently maintain a state-of-the-art manufacturing facility in Elizabethtown, NC. Our long history of loyalty and commitment is reflected in our employees, many of whom were on the original development team for some of our products, and are still with us today as we continue to refine and implement new improvements and innovations every year. This culture of low turnover and long term dedication is one of the ways we've been able to build and incorporate so much innovation and long lasting quality into our products.

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