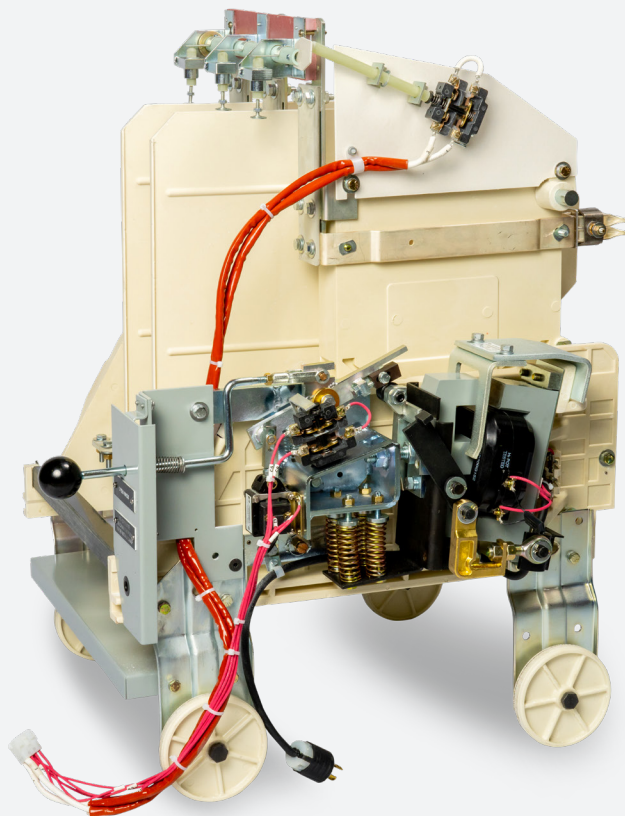

CR193V and CR193W Draw-Out Vacuum Limitamp® contactors



The CR193V and CR193W vacuum contactors are factory designed direct replacements for the obsolete IC2814 (air-break) and IC302 (air-break) contactors found in the installed base of legacy Limitamp products. These are new ABB factory designed and supported contactors to modernize existing Limitamp installations.

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013	Contactor Back View
014	Air-Break to Vacuum Conversion

General Information

This renewal parts bulletin will provide the proper identification of standard parts which may be required for the maintenance of CR193V (with clip fuses) and CR193W (with bolted fuses) vacuum Limitamp contactors.

Both the complete contactors and required renewal parts are shown as catalog numbers and are supported by photographs. Catalog numbers identified in this bulletin may not be the same as those parts on the original equipment. The renewal part catalog numbers are shown in kit form.

It is the intent of this bulletin to give our customers a quick and accurate way to identify parts required for normal maintenance of the CR193V and CR193W draw-out Vacuum Limitamp contactors. Unless otherwise stated, all the parts shown in the bulletin are compatible with the contactors manufactured since 1966.

To maintain maximum operating efficiency and reliability of your equipment, genuine ABB renewal parts are recommended.

Since contactors are supplied to meet specific customer control and distribution requirements, certain replacement parts not listed in this publication may occasionally be required. Please refer to the factory for these requests.

In these situations, please provide a complete description of the part, along with the complete data shown on the contactor nameplate that is affixed to the top of the contactor coil support assembly.

For pricing and availability of parts shown in this bulletin, contact your nearest ABB sales office.

Attention should be given to forecasting your specific renewal parts requirements to ensure on-site availability of the specific parts as required for normal maintenance and proper operation of your equipment.

Contactor Catalog Number

Example Catalog Number	CR193V	A	4	AA	1	A	412	AA	02	E
Argument Number	1	2	3	4	5	6	7	8	9	10

Argument 1: Basic Contactor Type

- CR193V: 400A Contactor with clip fuses
- CR194W: 400A Contactor with bolt in fuses

Argument 2: Voltage

- A: 2300V, 50/60Hz
- B: 4800V, 50/60Hz
- C: 5000V, 50/60Hz (for CR193 contactors only)

Argument 3: Current Ratings

- 4: 400A

Argument 4: Arc Chutes and Fuse Base Assembly

- AA: 2300 volts, w/fuse mounting
- AB: 4800 volts, w/fuse mounting
- AC: 5000 volts, no fuse mounting, no stabs (for CR193 contactors only)
- AD: 5000 volts, shorting bars, w/stabs (for CR193 contactors only)

Argument 5: Mounting Assembly

- 1: Wheels and 2300V intermediate power stabs
- 2: Wheels and 4800V or 5000V intermediate power stabs
- 3: No wheels and intermediate power stabs for all voltages

Argument 6: Armature

- A: Standard DC Magnet

Argument 7: Operating Coil

- 000: No Coil
- 412: 115V rectified AC without auxiliary components
- 413: 230V rectified AC without auxiliary components
- 415: 460V rectified AC without auxiliary components
- 452: 115V rectified AC with auxiliary components
- 453: 230V rectified AC with auxiliary components
- 455: 460V rectified AC with auxiliary components
- 512: 125VDC without holding resistors
- 513: 250VDC without holding resistors

- 514: 48VDC without holding resistors
- 552: 125VDC with holding resistors
- 553: 250VDC with holding resistors
- 554: 48VDC with holding resistors
- 815: 24VDC without holding resistors
- 855: 48VDC with holding resistors

Argument 8: Mechanical Latch Assembly

- AA: No mechanical latch
- AB: Magnetic close and release, no manual operation, with wire harness
- AD: Magnetic close and release, with manual release only, with wire harness
- AG: Magnetic close and release, with manual release only, without wire harness
- AH: Magnetic close and release, no manual operation, without wire harness

The following are for CR193W type contactors only:

- BA: Magnetic close and release, no manual operation, with wire harness, with anti-single-phase mechanism
- BD: Magnetic close and release, with manual release only, with wire harness, with anti-single-phase mechanism
- BG: Magnetic close and release, with manual release only, without wire harness, with anti-single-phase mechanism

Argument 9: Mechanical Latch Coil Voltage

- 02: No mechanical latch
- 03: 24VDC
- 04: 48VDC
- 05: 125VDC
- 06: 250VDC
- 75: 115V rectified AC
- 76: 230V rectified AC

Argument 10: Grounding

- A: Without ground strap
- B: With ground strap
- E: Without ground strap, with coil plug
- F: With ground strap, with coil plug

Common Contactor Mechanism

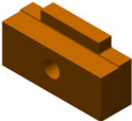
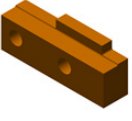


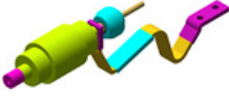

Part Selection

To determine the part number for a specific part, follow the steps listed below:

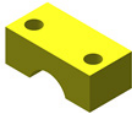






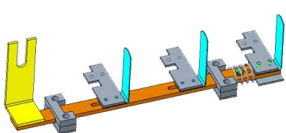




- 1. Determine the contactor catalog number. The contactor catalog number is printed on the nameplate, which is located on top of the coil support assembly.
- 2. Locate the specific item needed in the pictures on the following pages of this bulletin.

- 3. In the pictures, note the item number for the part needed.
- 4. Using the tables on the following pages of this bulletin, locate the part number and description for the needed part.

Note: For a specific contactor catalog number, use the item number (from pictures) and argument numbers (from catalog number) to locate the correct parts.

Item	Description	Part number	All contractors	Image
1	Magnet clamp top	188A5536P1	1	
2	Magnet clamp bottom	188A5536P2	1	
4	Magnet back plate	194A7843P1	1	
5	Coil retainer	218A5593G1	1	
10	Vacuum Bottle Assembly	204B4051GHG1	3	
11	Fixed End Bottle Support	169C6383BBP2	3	

—
Table 1. Contactor
Mechanism Parts

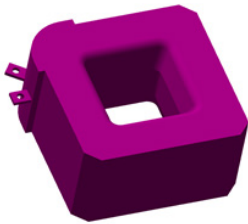
Item	Description	Part number	All contractors	Image
12	Fixed End Bottle Clamp	204B4051GGP1	3	
13	Movable Bottle Support	55C679820P1	3	
14	Bottle Pressure Spring	259A4148P1	3	
15	Bottle Sleeve Bearing	272A5651FTP1	3	
16	Insulator (Phase 2 only)	204B4051FTP1	1	
17	Interlock Operator	202B3620G1	1	
18	Tie Bar	116C9907P1	1	
19	Isolation Switch Handle Modification Kit	204B4051FUG1 See Page 15	X	
20	Contactor Economizing Module	DIE#SP-0331 or DIE#SP-0332 See Page 14	X	
40	Armature Assembly	272A5651GCG1	1	
41	Magnet	129B9715P1	1	
49	Return Spring	272A5651FWP1	4	

Operating Coil and Mechanical Latch

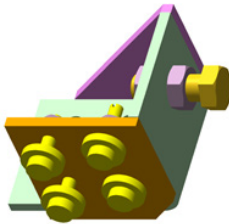
Part Selection

			Argument 7 Operating Coil															Argument 8 Mechanical Latch							
Item	Description	Part number	412	413	415	512	513	514	815	452	453	455	552	553	554	855	AA	AB	AD	AG	AH	BA	BB	BD	BG
44	Coil	1D300G139			1							1													
44	Coil	1D300G144		1			1				1			1											
44	Coil	1D300G148				1							1												
44	Coil	1D300G150							1							1									
44	Coil	1D300G152	1							1															
44	Coil	1D300G158						1							1										
45	Stop Assembly	272A5651FYG1															1					1			
45	Stop/Latch Assembly	Contact Factory																X	X	X	X		X	X	X
262	Trip Assembly	685D963G1																				1	1	1	1

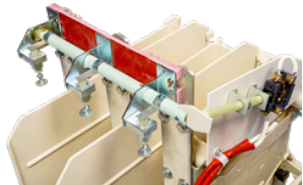
Table 2. Operating Coil and Mechanical Latch



Coil Image



Stop Assembly Image



Trip Assembly Image

Mounting Assembly and Grounding

Part Selection



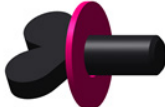
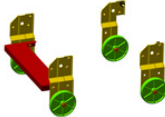
Item	Description	Part number	Argument 5 Mounting Assembly			Argument 10 Grounding				Image
			1	2	3	A	B	E	F	
34	Stab assembly	149B1754G7		2						
35	Stab assembly	149B1754G8	3	1						
36	Stab assembly	188A5686P2			3					
38	Handle	302A3499ANP1			1					
39	Thumb screw	188A5688G1			2					
233	Wheel Assembly	195B6267G1	1	1						
290	Plug	GE#GLD0611						1	1	Not Pictured
293	Receptacle	GE#GL0614						1	1	Not Pictured

Table 3. Mounting
Assembly and Grounding

Arc Chute and Fuse Base

Part Selection




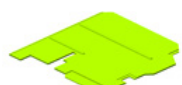
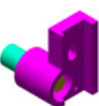



			CR193V				CR194W		
			Argument 4 Arc Chute and Fuse Base						
Item	Description	Part number	AA	AB	AC	AD	AA	AB	Image
160	Arc Chute, Left	202B3612G5	1						
160	Arc Chute, Left	202B3612G2		1					
160	Arc Chute, Left	202B3612G11			1				
160	Arc Chute, Left	202B3612G8				1			
160	Arc Chute, Left	204B4051FCG2					1	1	
161	Arc Chute, Center	202B3612G4	1						
161	Arc Chute, Center	202B3612G1		1					
161	Arc Chute, Center	202B3612G10			1				
161	Arc Chute, Center	202B3612G7				1			
161	Arc Chute, Center	204B4051FCG1					1	1	
162	Arc Chute Right	202B3612G6	1						
162	Arc Chute, Right	202B3612G3		1					
162	Arc Chute, Right	202B3612G11			1				
162	Arc Chute, Right	202B3612G9				1			
162	Arc Chute, Right	204B4051FCG3					1	1	
164	Interphase Barrier	139B7619P1	2	2	2	2	2	2	
165	Operator Shaft, Left	194A6900G2	1	1		1	1	1	
166	Barrier Support, Left	116C9908P4	1	1	1	1	1	1	
167	Operator Shaft Right	194A6900G1	1	1		1	1	1	
168	Barrier Support, Right	116C9908P3	1	1	1	1	1	1	

Table 4. Arc Chute and Fuse Base

Note: Items 160-162 include fuse clips, stabs, terminals and items 165-168. Left and right as noted in table is when the contactor is viewed from the fuse side.

Contactor Side View

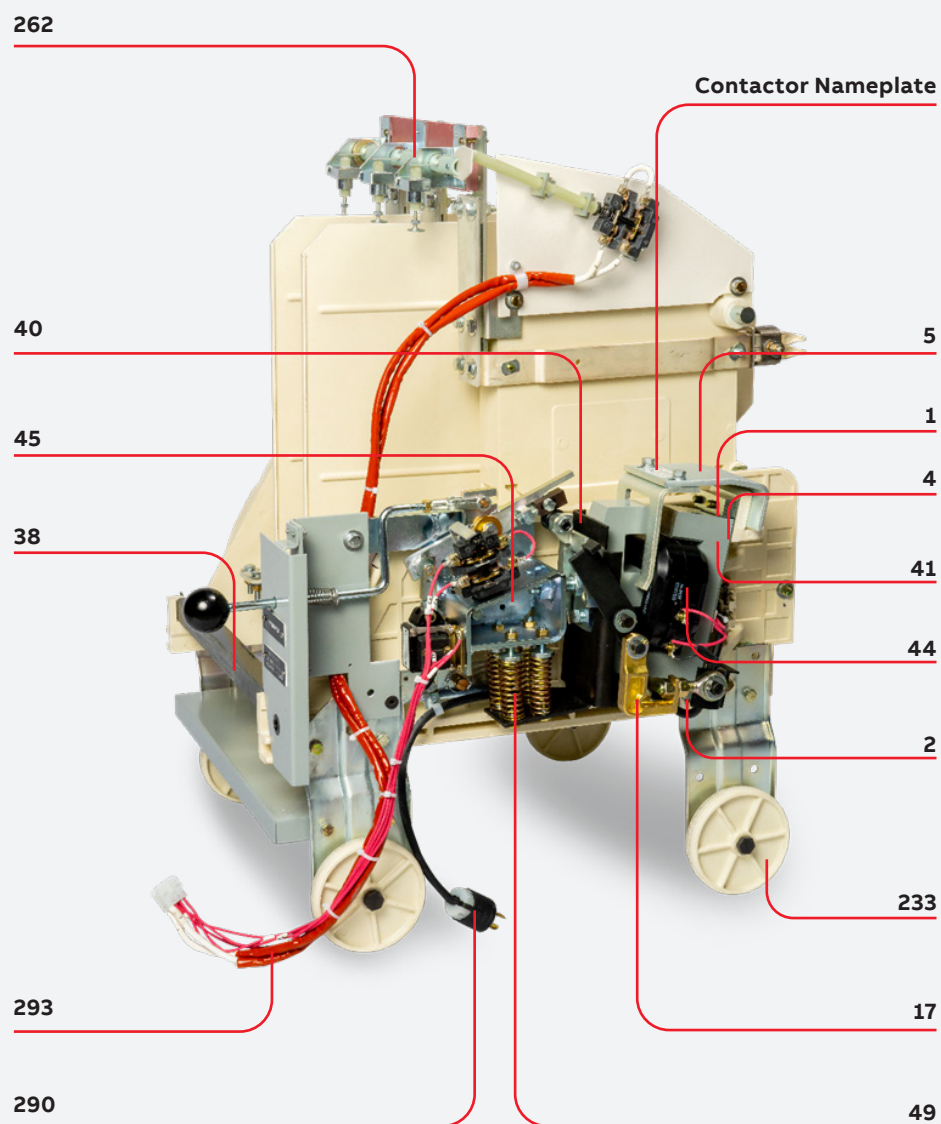


Figure 1. Contactor Side View

Vacuum Bottles and Supports

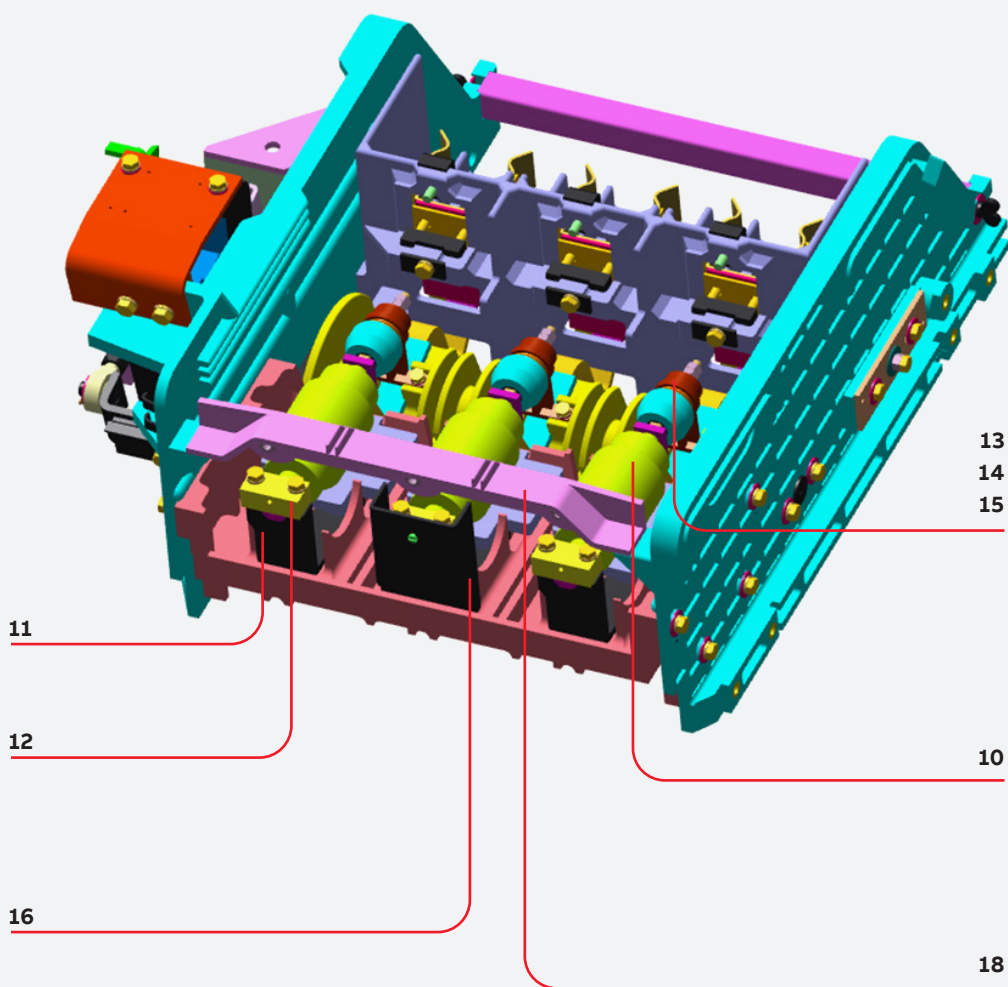


Figure 2. Vacuum Bottles and Supports (with Arc Chutes and Barriers Removed)

Contactor Back View

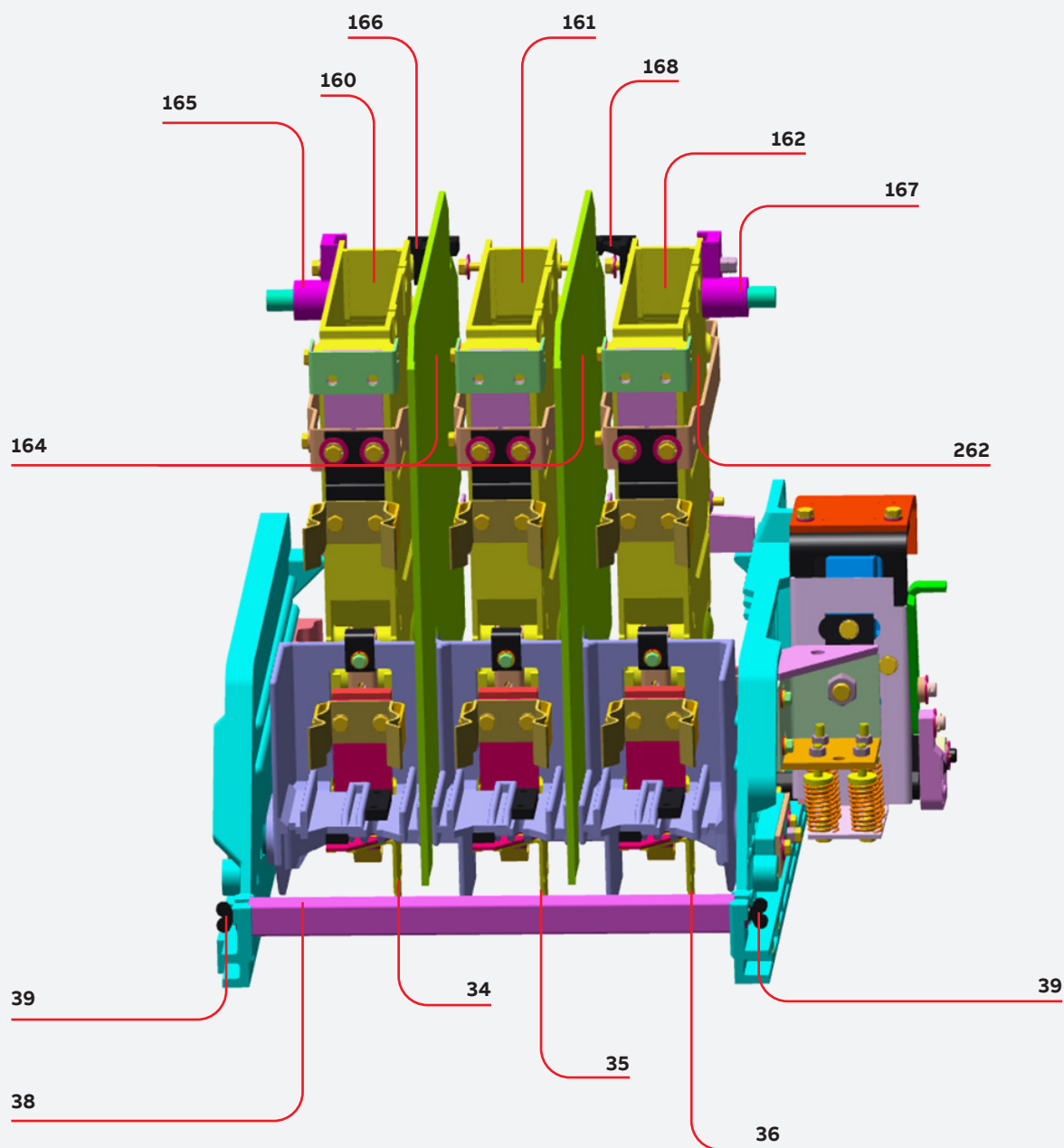


Figure 3. CR193V Contactor Back View – Fuse Holders Visible

Note for item #262: It mounts in this area for the CR193W contactor

Air-Break to Vacuum Conversion

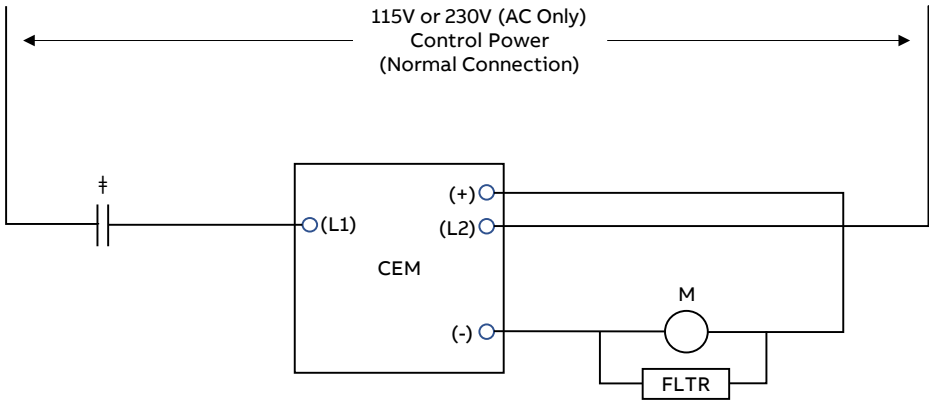
The CR193V and W vacuum Limitamp contactors are interchangeable with existing 400 ampere air-break contactors, beginning with the 1966 Limitamp design.

When replacing an air-break contactor with a vacuum contactor, a minor control circuit modification and an isolation switch handle modification are required. The handle modification is included with the contactor

The diagrams below show how the contactor economizing module (CEM) that is required for the CR193V and W contactors is typically connected in the control circuit.

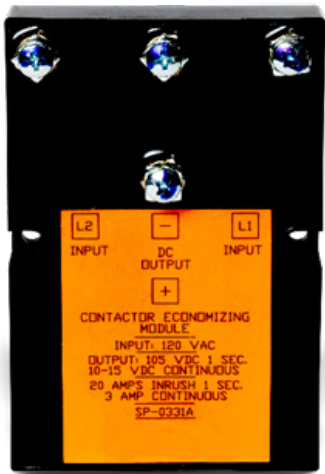
Order the correct CEM unit to match the control voltage in the starter that is being retrofitted with a draw-out vacuum contactor.

Typical CEM Connection

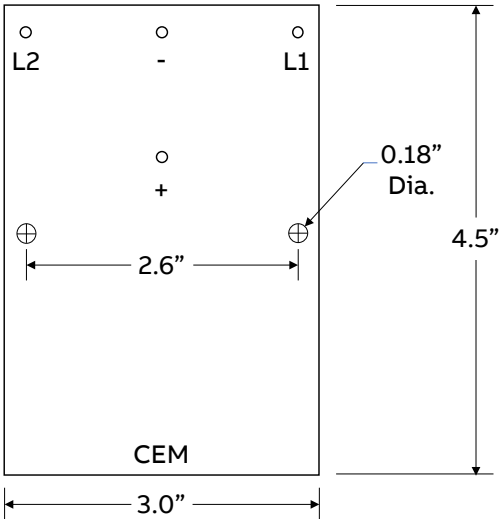


‡ — Contact for contactor pickup and dropout control by others with the following minimum contact ratings:
120 VAC: 20A Make/Break, 2A Continuous
240 VAC: 10A Make/Break, 1A Continuous

CEM: Contactor Economizing Module. Types:
DIE#SP-0331 (115VAC, 50 or 60 Hz)
DIE#SP-0332 (230VAC, 50 or 60 Hz)
FLTR: Contact Coil Suppressor. Type: 302A3847P1
M: Limitamp Contactor Coil (Must be DC Rated)



CEM Module

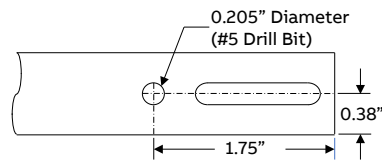


CEM Layout

In addition to the CEM module, a design change must be implemented in the existing switch handle to change interlocking. Order part number 204B4051FUG1, Isolation Switch Handle Modification Kit, to modify the existing Slide Bar.

204B4051FUG1 Bill of Materials

#	Qty	Description	Part Number
1	1	Spring Retainer	302A3900ALP1
2	2	Guide	302A3900AMP1
3	1	Damper Spring	272A5651GNP1
4	1	Guide Brace	302A3900ANP1
5	2	Adj. Screw, 8-32 x 5/8"	N57P15010B6
6	1	Sems Nut, 8-32	N238P15B6
7	2	Flat Washer, #8	N402P8B6
8	2	Star Washer, #8	N403P16B6
9	1	Double Interlock Nut Plate	302A3900ASP1



Modification of Existing Slide Bar

Instructions

1. Remove the nut plate on the front "M" interlock as shown. Do not discard the existing stainless-steel depressor spring or existing nut plate. Discard one (1) of the screws and flat washers.

2. Drill a 0.205" diameter (#5 drill bit) hole in the original slide bar as shown in the slide bar modification sketch.

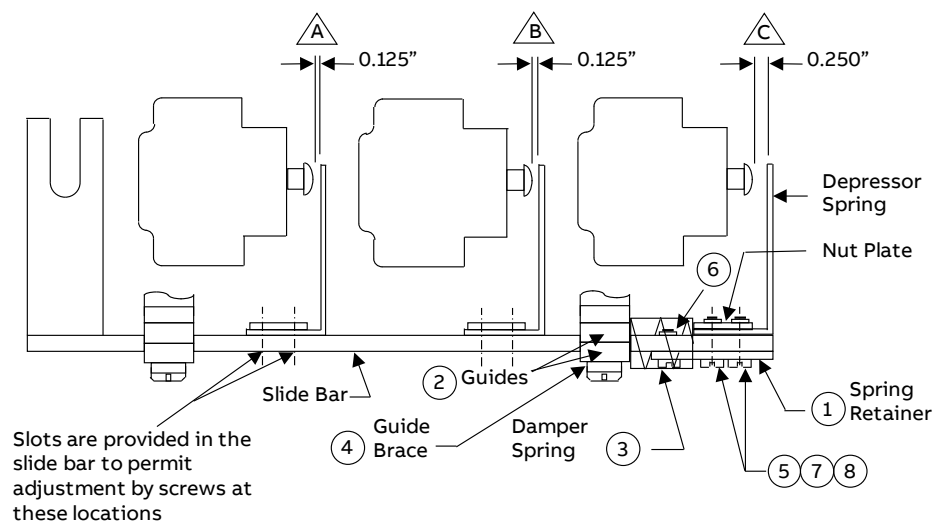
3. Remove the two (2) guides at the front "M" intersection and discard. Retain the mounting hardware, except for the flat washers. Install the new guides (Part #2) with the notch toward the front of the shell. Install the guide brace (Part #4) in place of the flat washers and reassemble the lock washers and bolts.

4. Install the damper spring (Part #3) over the slide bar.

5. Install the spring retainer (Part #1) so that the slot lines up with the slot in the slide bar and assemble to the drilled hole with the sems screw removed from the nut plate and the sems nut (Part #6) supplied with this kit.

6. Reassemble the original depressor spring to the slide bar using the original nut plate, the new screws (Part #5), new flat washers (Part #7) and new star washers (Part #8).

7. Adjust depressor spring finger gap to values shown at A, B, and C.



Modified Interlock Assembly

Note: Use Part #9 for double stack interlocks only



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