DC Magnet Coils

When Ordering Specify

Conversion Kit for Field Assembly

- Catalog number

Factory Installed DC Coil

- For factory installed DC magnet coil on AC contactors or non-combination starters (open type only), substitute the code suffix from the table on this page for the magnet coil identifier in the device catalog number. EXAMPLE: For Size 0 AC contactor with a 24 Vdc coil, change AN16BN0**A**C to AN16BN0**T1**C

Application

- Connect for separate control
- Not for use with cover control switch operators
- Use twin break, heavy-duty pilot devices
- Designed for +10%, –20% rated voltage, continuous duty operation

Non-Reversing Kit Consists of:

- One encapsulated DC magnet coil
- One NCI or NO/NCI side mounted auxiliary contact

Note: These kits are supplied with a NO/NCI side mounted auxiliary contact in place of the NCI contact.

- Two blue colored connection wires
- One instruction publication

Operation

See next page for operation details.

DC Magnet Coils

Contactor or Starter Size		Conversion Data					Complete Conversion Kit		Factory Installed
			Magnet Coil						
NEMA	IEC	Volts	Coil Number	Amps P.U./Seal	Watts P.U./Seal	NCI Interlock	Catalog Number	Ship Wt. Lbs (kg)	Code Suffix
Non-Reversing—Kit Includes NCI Side Mounted Auxiliary Contact									
00 and 0 CN35–A, B, D D15 Relays	A–F	12	**9-2988-11**	6.4/0.28	76.8/3.36	**C320KGD1**	**C335KD3R1**	1.0 (0.5)	**R1**
		24	**9-2988-12**	3.2/0.14	76.8/3.36	**C320KGD1**	**C335KD3T1**		**T1**
		48	**9-2988-13**	1.6/0.07	76.8/3.36	**C320KGD1**	**C335KD3W1**		**W1**
		120	**9-2988-14**	0.64/0.028	76.8/3.36	**C320KGD1**	**C335KD3A1**		**A1**
① 00 and 0 CN35–A, B, D D15 Relays	A–F	12	**9-2988-11**	6.4/0.28	76.8/3.36	**C320KGD2** ①	**C335KD3R4**	1.0 (0.5)	**R4**
		24	**9-2988-12**	3.2/0.14	76.8/3.36	**C320KGD2** ①	**C335KD3T4**		**T4**
		48	**9-2988-13**	1.6/0.07	76.8/3.36	**C320KGD2** ①	**C335KD3W4**		**W4**
		120	**9-2988-14**	0.64/0.028	76.8/3.36	**C320KGD2** ①	**C335KD3A4**		**A4**
1 and 2 CN35–G	G–K	12	**9-2990-1**	15.4/0.42	185/4.98	**C320KGD5**	**C335KD4R4**	1.0 (0.5)	**R4**
		24	**9-2990-2**	7.7/0.021	185/4.96	**C320KGD5**	**C335KD4T4**		**T4**
		48	**9-2990-3**	3.9/0.11	185/5.04	**C320KGD5**	**C335KD4W4**		**W4**
		120	**9-2990-4**	1.5/0.041	185/4.87	**C320KGD5**	**C335KD4A4**		**A4**
3 CN35–K	L–N	12	**9-3002-1**	24/0.40	293/4.84	**C320KGD3**	**C335KD5R1**	2.0 (0.9)	**R1**
		24	**9-3002-2**	12/0.20	288/4.75	**C320KGD3**	**C335KD5T1**		**T1**
		48	**9-3002-3**	6.1/0.097	295/4.67	**C320KGD3**	**C335KD5W1**		**W1**
		120	**9-3002-4**	2.5/0.038	298/4.57	**C320KGD3**	**C335KD5A1**		**A1**
4 and 5 CN35–N, S	P–S	24	**9-2026-4**	18/0.22	400/5.3	**C320KGD3**	**C335KA3T1**	2.5 (1.1)	**T1B**
		48	**9-2026-3**	9/0.11	400/5.2	**C320KGD3**	**C335KA3W1**		**W1B**
		120	**9-2026-2**	3.3/0.05	450/5.4	**C320KGD3**	**C335KA3A1**		**A1B**
		240	**9-2026-1**	1.7/0.02	440/4.9	**C320KGD3**	**C335KA3B1**		**B1B**
Reversing									
00 and 0 CN35–A, B, D D15 relays	A–F	12	**(2) 9-2988-1**	6.4/0.28	76.8/3.36	**(2) C320KGD1**	**C335RD3R1** ②	1.0 (0.5)	**R1** ③
		24	**(2) 9-2988-2**	3.2/0.14	76.8/3.36	**(2) C320KGD1**	**C335RD3T1** ②		**T1** ③
		48	**(2) 9-2988-3**	1.6/0.07	76.8/3.36	**(2) C320KGD1**	**C335RD3W1** ②		**W1** ③
		120	**(2) 9-2988-4**	0.64/0.028	76.8/3.36	**(2) C320KGD1**	**C335RD3A1** ②		**A1** ③
1 and 2 CN35–G	G–K	12	**(2) 9-2990-1**	15.4/0.42	185/4.98	**(2) C320KGD3**	④	—	**R1** ③
		24	**(2) 9-2990-2**	7.7/0.21	185/4.96	**(2) C320KGD3**	④		**T1** ③
		48	**(2) 9-2990-3**	3.9/0.11	185/5.04	**(2) C320KGD3**	④		**W1** ③
		120	**(2) 9-2990-4**	1.5/0.041	185/4.87	**(2) C320KGD3**	④		**A1** ③

Notes

① These kits are supplied with a NO/NCI side mounted auxiliary contact in place of the NCI contact.

② Kit does not include mechanical interlock or crossover wiring. Two NO/NCI top mounted auxiliary contacts are supplied for electrical interlocking.

③ Factory installed DC coils on NEMA contactors and starters include a NO/NC top mounted auxiliary contact on each contactor for electrical interlocking. On IEC contactors and starters, a NC top mounted auxiliary contact is supplied on each contactor for electrical interlocking.

④ Available factory assembled only.

Operation

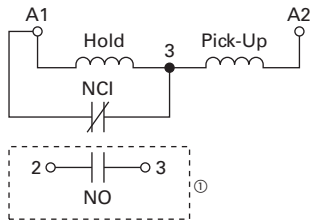
These DC coil kits have separate pick-up and seal windings. A **special** (side mounted) early-break NCI auxiliary contact is used to either disconnect the pick-up winding or insert the seal winding in series with the pick-up winding, depending on the frame size of the contactor. DC coil kits come in two styles, a suffix **1** and a suffix **4**. Suffix 1 contains only the **special** (side mounted) early break NCI auxiliary contact. Suffix 4 contains a NO contact in the same package as the **special** (side mounted) early-break NCI auxiliary contact.

Note: For NEMA Sizes 00 and 0 and IEC Sizes A–F, contactors may utilize either suffix 1 or 4 DC coil kits; starters may utilize suffix 4 DC coil kits only. For NEMA Sizes 1 and 2 and IEC Sizes G–K, both contactors and starters may utilize a suffix 4 DC coil kit only.

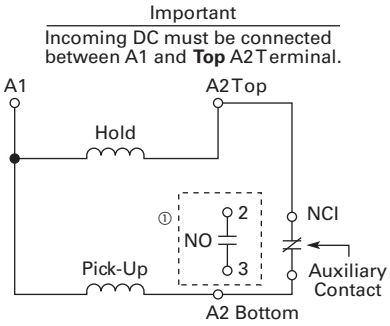
On the above sizes only, when the **special** auxiliary package is mounted on the side of a contactor or starter, **no** standard auxiliary contact may be mounted on the same side.

Note: For NEMA Sizes 3–5 and IEC Sizes L–S, special coil NCI clearing contact is an add-on auxiliary (**must** mount on a base mount auxiliary contact; normally a 1NO). This arrangement will normally account for two of the three contact positions on the side of each contactor or starter.

Elementary Diagrams



DC Coil Elementary Diagram for NEMA Sizes 1–3 and IEC Sizes G–N Contactors and Starters



DC Coil Elementary Diagram for NEMA Sizes 00, 0, 4 and 5 and IEC Sizes A–F and P–S Contactors and Starters

Competitive Mounting Plates

The C321 adapter plates permit direct replacement of competitive starters with Freedom Series starters without drilling and tapping new mounting holes. Allen-Bradley 509, Eaton's A10 (adapter plate not required for replacing A10 Starter Sizes 1, 4 and 5), Furnas 14, ESP100, General Electric CR206, CR306, Siemens SXL, Square D 8536, Westinghouse A200, B200.

C321CMP1

Competitive Mounting Plates

Freedom NEMA Size	Index Number ② Catalog Number
00, 0	**C321CMP0**
1	**C321CMP1**
2	**C321CMP2**
3	**C321CMP3**
4	**C321CMP4**
5	**C321CMP5**

Note

① 1NO available in Suffix 4 kits only.

② Handling number only—does not appear on product. The handling number is stamped on the carton label only.

Special Modifications

For Catalog Numbers AN16, AN56, CE15, CN15, CN35, CN55

Addition or Special Feature	Starter Size —NEMA 00	0	1/—	2	3	4	5	6	7	8
Control Circuit										
Extra auxiliary circuit, factory installed NO or NC—each contact ①	Consult sales office for pricing adders.									
Transient suppressor ①	Consult sales office for pricing adders.									
Power Circuit										
Contactor/starter for ring lug capability—add Mod Code **T16** to catalog number ② (Power terminals only, control terminals as standard) Standalone overload relays can not accept ring lugs on line side	Consult sales office for pricing adders.									
Factory Installed Dust Covers										
Factory installed C320DSTCVR—add Mod Code **-53** to catalog number ①					NA	NA	NA	NA	NA	NA

Renewal Parts

For a complete listing of parts, refer to the Renewal Parts Publication Number referenced below.

For Catalog Numbers AN16, AN30, AN40, AN56, AN70, AN80, AN800, CN15, CN35 ③ and CN55 Contactors and Starters (Size 00, 0)

Description		NEMA Size 00 Series B1 Part No.	NEMA Size 00 Series C1 Part No.	NEMA Size 0 Series B1 Part No.	NEMA Size 0 Series C1 Part No.
Renewal Parts Publication Number		**22177**	**22177**	**22177**	**22177**
Contact Kits					
Two-pole		④	④	④	④
Three-pole		④	④	④	④
Four-pole		④	④	④	④
Five-pole		④	④	④	④
Magnet Coils	**Coil Suffix**				
120V 60 Hz or 110V 50 Hz	**A**	**9-2875-1**	**9-2875-1**	**9-2876-1**	**9-2876-1**
240V 60 Hz or 220V 50 Hz	**B**	**9-2875-2**	**9-2875-2**	**9-2876-2**	**9-2876-2**
480V 60 Hz or 440V 50 Hz	**C**	**9-2875-3**	**9-2875-3**	**9-2876-3**	**9-2876-3**
600V 60 Hz or 550V 50 Hz	**D**	**9-2875-4**	**9-2875-4**	**9-2876-4**	**9-2876-4**
208V 60 Hz	**E**	**9-2875-5**	**9-2875-5**	**9-2876-5**	**9-2876-5**
277V 60 Hz	**H**	**9-2875-12**	**9-2875-12**	**9-2876-12**	**9-2876-12**
208/240V 60 Hz	**J**	**9-2875-37**	**9-2875-37**	**9-2876-17**	**9-2876-17**
240V 50 Hz	**K**	**9-2875-11**	**9-2875-11**	**9-2876-11**	**9-2876-11**
380–415V 50 Hz	**L**	**9-2875-6**	**9-2875-6**	**9-2876-6**	**9-2876-6**
380V 50 Hz	**L**	—	—	—	—
415V 50 Hz	**M**	—	—	—	—
550V 50 Hz	**N**	—	—	—	—
24V 60 Hz–24V 50 Hz	**T**	**9-2875-36**	**9-2875-36**	**9-2876-36**	**9-2876-36**
24V 60 Hz	**T**	—	—	—	—
24V 50 Hz	**U**	**9-2875-36**	**9-2875-36**	**9-2876-36**	**9-2876-36**
32V 50 Hz	**V**	**9-2875-16**	**9-2875-16**	**9-2876-16**	**9-2876-16**
48V 60 Hz	**W**	**9-2875-8**	**9-2875-8**	**9-2876-8**	**9-2876-8**
48V 50 Hz	**Y**	**9-2875-9**	**9-2875-9**	**9-2876-9**	**9-2876-9**
Magnet Frame Armature					
Lower magnet frame		④	④	④	④
Upper magnet frame		④	④	④	④

Notes

① These modifications are generally available in kit form at lower cost. See specific product sections for kit listings.

② The T16 modifications are only available on C306 overloads and the following three-pole devices: CN15, CN55, AN16, AN56 and AN700 (separate winding only). The 45 mm and 65 mm frames (NEMA Size 0–2) reversing devices (CN55B, CN55D, CN55G, AN56B, AN56D, AN56G, AN700 and AN700G) with the T16 modification are supplied without crossover wires.

③ CN35A = Size 00, CN35B and CN35D = Size 0, CN35G = Size 2, CN35K = Size 3, CN35N = Size 4, and CN35S = Size 5.

④ Replace with complete contactor.

For Catalog Numbers AN16, AN30, AN40, AN56, AN70, AN80, AN800, CN15, CN35 ① and CN55 Contactors and Starters (Size 1, 2)

Description		NEMA Size 1 Series A1 Part No.	NEMA Size 1 Series B1 Part No.	NEMA Size 2 Series A1 Part No.	NEMA Size 2 Series B1 Part No.	NEMA Size 3 Part No.
Renewal Parts Publication Number		**20861**	**22177**	**20861**	**22177**	**20426**
Contact Kits						
Two-pole		**6-65**	**6-65**	**6-65-7**	**6-65-7**	**6-43-5**
Three-pole		**6-65-2**	**6-65-2**	**6-65-8**	**6-65-8**	**6-43-6**
Four-pole		**6-65-9**	**6-65-9**	**6-65-15**	**6-65-15**	—
Five-pole		**6-65-10**	**6-65-10**	**6-65-16**	**6-65-16**	—
Magnet Coils	**Coil Suffix**					
120V 60 Hz or 110V 50 Hz	**A**	**9-3285-1**	**9-3285-1**	**9-3285-1**	**9-3285-1**	**9-2756-1 KIT**
240V 60 Hz or 220V 50 Hz	**B**	**9-2703-2 KIT**	**9-2703-2 KIT**	**9-2703-2 KIT**	**9-2703-2 KIT**	**9-2756-2 KIT**
480V 60 Hz or 440V 50 Hz	**C**	**9-2703-3 KIT**	**9-2703-3 KIT**	**9-2703-3 KIT**	**9-2703-3 KIT**	**9-2756-3 KIT**
600V 60 Hz or 550V 50 Hz	**D**	**9-2703-4 KIT**	**9-2703-4 KIT**	**9-2703-4 KIT**	**9-2703-4 KIT**	**9-2756-4 KIT**
208V 60 Hz	**E**	**9-2703-9 KIT**	**9-2703-9 KIT**	**9-2703-9 KIT**	**9-2703-9 KIT**	**9-2756-5 KIT**
277V 60 Hz	**H**	**9-2703-7 KIT**	**9-2703-7 KIT**	**9-2703-7 KIT**	**9-2703-7 KIT**	**9-2756-9 KIT**
208/240V 60 Hz	**J**	—	—	—	—	—
240V 50 Hz	**K**	**9-2703-14 KIT**	**9-2703-14 KIT**	**9-2703-14 KIT**	**9-2703-14 KIT**	**9-2756-13 KIT**
380–415V 50 Hz	**L**	**9-2703-8 KIT**	**9-2703-8 KIT**	**9-2703-8 KIT**	**9-2703-8 KIT**	—
380V 50 Hz	**L**	—	—	—	—	**9-2756-12 KIT**
415V 50 Hz	**M**	—	—	—	—	**9-2756-8 KIT**
550V 50 Hz	**N**	—	—	—	—	**9-2756-14 KIT**
24V 60 Hz–24V 50 Hz	**T**	—	—	—	—	—
24V 60 Hz	**T**	**9-2703-6 KIT**	**9-2703-6 KIT**	**9-2703-6 KIT**	**9-2703-6 KIT**	**9-2756-6 KIT**
24V 50 Hz	**U**	**9-2703-12 KIT**	**9-2703-12 KIT**	**9-2703-12 KIT**	**9-2703-12 KIT**	**9-2756-11 KIT**
32V 50 Hz	**V**	**9-2703-10 KIT**	**9-2703-10 KIT**	**9-2703-10 KIT**	**9-2703-10 KIT**	**9-2756-10 KIT**
48V 60 Hz	**W**	**9-2703-11 KIT**	**9-2703-11 KIT**	**9-2703-11 KIT**	**9-2703-11 KIT**	**9-2756-15 KIT**
48V 50 Hz	**Y**	**9-2703-13 KIT**	**9-2703-13 KIT**	**9-2703-13 KIT**	**9-2703-13 KIT**	**9-2756-7 KIT**
Magnet Frame Armature						
Lower magnet frame		**17-18200**	**17-18200**	**17-18200**	**17-18200 KIT**	**17-8955-2 KIT**
Upper magnet frame		**48-1936**	**48-1936**	**48-1936**	**48-1936 KIT**	**48-1902 KIT**

Note

① CN35A = Size 00, CN35B and CN35D = Size 0, CN35G = Size 2, CN35K = Size 3, CN35N = Size 4, and CN35S = Size 5.

For a complete listing of parts, refer to the Renewal Parts Publication Number referenced below.

For Catalog Numbers AN16, AN30, AN40, AN56, AN70, AN80, AN800, CN15, CN35 ① and CN55 Contactors and Starters (Size 4, 5, 6)

Description		NEMA Size 4 Series A1 Part No.	NEMA Size 4 Series B1 Part No.	NEMA Size 5 Series A1 Part No.	NEMA Size 5 Series B1 Part No.	NEMA Size 6 Contactor and Starter Series A1, Starter Series B1 Part No.	NEMA Size 6 Contactor and Starter Series B1, Starter Series C1 Part No.
Renewal Parts Publication Number		**20428**	**20428**	**20429**	**20429**	**20146**	**23349**
Contact Kits							
Two-pole		**6-44**	**6-26**	**6-45**	**6-45**	**6-601-2**	—
Three-pole		**6-44-2**	**6-26-2**	**6-45-2**	**6-45-2**	**6-601**	**6-648**
Magnet Coils	**Coil Suffix**						
120V 60 Hz or 110V 50 Hz	**A**	**9-1891-1 KIT**	**9-1891-1 KIT**	**9-1891-1 KIT**	**9-1891-1 KIT**	**9-2698**	**9-3006**
240V 60 Hz or 220V 50 Hz	**B**	**9-1891-2 KIT**	**9-1891-2 KIT**	**9-1891-2 KIT**	**9-1891-2 KIT**	**9-2698-2**	**9-3006-2**
480V 60 Hz or 440V 50 Hz	**C**	**9-1891-3 KIT**	**9-1891-3 KIT**	**9-1891-3 KIT**	**9-1891-3 KIT**	**9-2698-3**	**9-3006-3**
600V 60 Hz or 550V 50 Hz	**D**	**9-1891-4 KIT**	**9-1891-4 KIT**	**9-1891-4 KIT**	**9-1891-4 KIT**	**9-2698-4**	**9-3006-4**
208V 60 Hz	**E**	**9-1891-13 KIT**	**9-1891-13 KIT**	**9-1891-13 KIT**	**9-1891-13 KIT**	**9-2698-5**	—
277V 60 Hz	**H**	**9-1891-26 KIT**	**9-1891-26 KIT**	**9-1891-26 KIT**	**9-1891-26 KIT**	—	—
208/240V 60 Hz	**J**	—	—	—	—	—	—
240V 50 Hz	**K**	**9-1891-20 KIT**	**9-1891-20 KIT**	**9-1891-20 KIT**	**9-1891-20 KIT**	—	—
380–415V 50 Hz	**L**	—	—	—	—	**9-2698-6**	**9-3006-7**
380V 50 Hz	**L**	**9-1891-14 KIT**	**9-1891-14 KIT**	**9-1891-14 KIT**	**9-1891-14 KIT**	—	—
415V 50 Hz	**M**	**9-1891-21 KIT**	**9-1891-21 KIT**	**9-1891-21 KIT**	**9-1891-21 KIT**	—	—
550V 50 Hz	**N**	**9-1891-8 KIT**	**9-1891-8 KIT**	**9-1891-8 KIT**	**9-1891-8 KIT**	—	—
24V 60 Hz–24V 50 Hz	**T**	—	—	—	—	—	**9-3006-8**
24V 60 Hz	**T**	**9-1891-15 KIT**	**9-1891-15 KIT**	**9-1891-15 KIT**	**9-1891-15 KIT**	—	—
24V 50 Hz	**U**	**9-1891-16 KIT**	**9-1891-16 KIT**	**9-1891-16 KIT**	**9-1891-16 KIT**	—	—
48V 60 Hz	**W**	—	—	—	—	**9-2698-8**	**9-3006-9**
48V 50 Hz	**Y**	**9-1891-18 KIT**	**9-1891-18 KIT**	**9-1891-18 KIT**	**9-1891-18 KIT**	—	—
Overload Relays							
For replacement on existing starters three-pole—ambient compensated bimetallic		**10-6530-4**	**10-6530-4**	**C306DN3B**	**C306DN3B**	**C306DN3B**	**C306DN3B**
Current Transformer		—	—	**42-3564**	**42-3564**	**42-3598**	**42-3598**
Magnet Frame Armature ②							
Lower Magnet Frame		**48-1030-2**	**48-1030-2**	**48-1030-2**	**48-1030-2**	—	—
Upper Magnet Frame		**48-1029-4**	**48-1029-4**	**48-1029-4**	**48-1029-4**	—	—

Feeder Group Renewal ③

Volts	Hertz	NEMA Size 4 Series A1	NEMA Size 4 Series B1	NEMA Size 5 Series A1	NEMA Size 5 Series B1	NEMA Size 6 Contactor and Starter Series A1, Starter Series B1	NEMA Size 6 Contactor and Starter Series B1, Starter Series C1
110–120	50/60	—	—	—	—	**9-2705**	**9-3007**
220–240	50/60	—	—	—	—	**9-2705-2**	**9-3007-2**
440–480	50/60	—	—	—	—	**9-2705-3**	**9-3007-3**
550–600	50/60	—	—	—	—	**9-2705-4**	**9-3007-4**
208	50/60	—	—	—	—	**9-2705-5**	**9-3007-5**
380–415	50/60	—	—	—	—	**9-2705-6**	**9-3007-8**
48–52	50/60	—	—	—	—	**9-2705-8**	**9-3007-6**

Notes

① CN35A = Size 00, CN35B and CN35D = Size 0, CN35G = Size 2, CN35K = Size 3, CN35N = Size 4, and CN35S = Size 5.
② Consult factory.
③ Voltage ratings of the main coils must match those of the feeder group for proper operation of the starter/contactor.

For a complete listing of parts, refer to the Renewal Parts Publication Number referenced below.

For Catalog Numbers AN16, AN30, AN40, AN56, AN70, AN80, AN800, CN15, CN35 ① and CN55 Contactors and Starters (Size 7, 8)

Description		NEMA Size 7 Series A1 Part No.	Series B1 Part No.	NEMA Size 8 Series A1 Part No.	Series B1 Part No.
Renewal Parts Publication Number		**20848**	**20848**	**20849**	**20849**
Contact Kits					
Two-pole		—	—	—	—
Three-pole		**6-613**	**6-613**	**6-571**	**6-571**
Magnet Coils	**Coil Suffix**				
120V 60 Hz or 110V 50 Hz	**A**	**9-2698**	**9-2698**	**9-2654**	**9-2654**
240V 60 Hz or 220V 50 Hz	**B**	**9-2698-2**	**9-2698-2**	**9-2654-2**	**9-2654-2**
480V 60 Hz or 440V 50 Hz	**C**	**9-2698-3**	**9-2698-3**	**9-2654-3**	**9-2654-3**
600V 60 Hz or 550V 50 Hz	**D**	**9-2698-4**	**9-2698-4**	**9-2654-4**	**9-2654-4**
208V 60 Hz	**E**	**9-2698-5**	**9-2698-5**	**9-2654-6**	**9-2654-6**
277V 60 Hz	**H**	—	—	—	—
208/240V 60 Hz	**J**	—	—	—	—
240V 50 Hz	**K**	—	—	—	—
380–415V 50 Hz	**L**	—	—	—	—
380V 50 Hz	**L**	**9-2698-6**	**9-2698-6**	**9-2654-5**	**9-2654-5**
415V 50 Hz	**M**	—	—	—	—
550V 50 Hz	**N**	—	—	—	—
24V 60 Hz–24V 50 Hz	**T**	—	—	—	—
24V 60 Hz	**T**	—	—	—	—
24V 50 Hz	**U**	—	—	—	—
32V 50 Hz	**V**	—	—	—	—
48V 60 Hz	**W**	—	—	—	—
48V 50 Hz	**Y**	—	—	—	—
Overload Relays					
For replacement on existing starters three-pole—ambient compensated bimetallic		**C306DN3B**	**C306DN3B**	**C306DN3B**	**C306DN3B**
Current Transformer		**42-3598-2**	**42-3598-2**	**42-3598-3**	**42-3598-3**
Magnet Frame Armature ②					
Lower magnet frame		—	—	—	—
Upper magnet frame		—	—	—	—

Notes

① CN35A = Size 00, CN35B and CN35D = Size 0, CN35G = Size 2, CN35K = Size 3, CN35N = Size 4, and CN35S = Size 5.

② Consult factory.

Feeder Group Renewal ①

Volts	Hertz	NEMA Size 7 Series A1	NEMA Size 7 Series B1	NEMA Size 8 Series A1	NEMA Size 8 Series B1
110–120	50/60	**9-2705**	**9-2705**	—	—
220–240	50/60	**9-2705-2**	**9-2705-2**	—	—
440–480	50/60	**9-2705-3**	**9-2705-3**	—	—
550–600	50/60	**9-2705-4**	**9-2705-4**	—	—
208	50/60	**9-2705-5**	**9-2705-5**	—	—
380–415	50/60	**9-2705-6**	**9-2705-6**	—	—
48–52	50/60	**9-2705-8**	**9-2705-8**	—	—
120	50/60	—	—	**9-2664**	**9-2664**
240	50/60	—	—	**9-2664-2**	**9-2664-2**
480	50/60	—	—	**9-2664-3**	**9-2664-3**
600	50/60	—	—	**9-2664-4**	**9-2664-4**
380	50/60	—	—	**9-2664-5**	**9-2664-5**
208	50/60	—	—	**9-2664-6**	**9-2664-6**
415	50/60	—	—	**9-2664-7**	**9-2664-7**
110	50/60	—	—	**9-2664-8**	**9-2664-8**
220	50/60	—	—	**9-2664-9**	**9-2664-9**
550	50/60	—	—	**9-2664-10**	**9-2664-10**
440	50/60	—	—	**9-2664-11**	**9-2664-11**

Technical Data and Specifications

All data is based on a standard contactor with no auxiliary devices and a 120 Vac or 24 Vdc magnet coil. Coil data has a ±5% range depending on the application, therefore specific data may vary.

Coil Data Notes

P.U.	Pick-up time is the average time taken from closing of the coil circuit to main contact touch
D.O.	Drop-out time is the average time taken from opening of the coil circuit to main contact separation
Cold	Coil data with a cold coil
Hot	Coil data with a hot coil

Note

① Voltage ratings of the main coils must match those of the feeder group for proper operation of the starter/contactor.

Specifications—Sizes 00–3

Description	Contactor Catalog Number/Size CN15A NEMA Size 00	CN15B NEMA Size 0	CN15D NEMA Size 1	CN15G NEMA Size 2	CN15K NEMA Size 3
Configuration					
Number of poles	2, 3, 4	2, 3	2, 3, 4, 5	2, 3, 4, 5	2, 3
Auxiliary contacts, standard	4th pole NO (1)	Side NO (1)	Side NO (1)	Side NO (1)	Side NO (1)
Add-on auxiliary contacts	Top (4) or side (4)	Top (4) or side (3)	Top (4) or side (3)	Top (4) or side (3)	Left side (4) or right side (3)
Frame size	45 mm	45 mm	65 mm	65 mm	90 mm
Maximum voltage rating	600 Vac	600 Vac	600 Vac	600 Vac	600 Vac
Continuous ampere ratings (I)	9A	18A	27A	45A	90A
Maximum Horsepower (hp)					
Single-phase					
115V	1/3	1	2	3	7-1/2
230V	1	2	3	7-1/2	15
Three-phase					
200V	1-1/2	3	7-1/2	10	25
230V	1-1/2	3	7-1/2	15	30
460V	2	5	10	25	50
575V	2	5	10	25	50
AC Magnet Coil Data					
Pick-up volts—cold	85%	85%	85%	85%	85%
Pick-up volts—hot	85%	85%	85%	85%	85%
Pick-up voltamperes	80	100	230	230	390
Pick-up watts	49	65	95	95	112
Sealed voltamperes	7.5	10	28	28	49.8
Sealed watts	2.4	3.1	7.8	7.8	13
Drop-out volts—cold	75%	75%	75%	75%	75%
Drop-out volts—hot	75%	75%	75%	75%	75%
Maximum operation rate—ops/hour	12,000	12,000	12,000	12,000	7,200
Pick-up time (ms)	12	12	20	20	14
Drop-out time (ms)	12	12	14	14	11
Coil operating range % of rated voltage	–15% to +10%	–15% to +10%	–15% to +10%	–15% to +10%	–15% to +10%
DC magnet coil data	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.
Operating temperature	–20° to 65°C	–20° to 65°C	–20° to 65°C	–20° to 65°C	–20° to 65°C
Maximum operating altitude (ft)	6000	6000	6000	6000	6000
Mechanical life	20,000,000	20,000,000	10,000,000	10,000,000	6,000,000
Electrical Life (480V/60 Hz)					
AC-3	4,000,000	3,000,000	5,000,000	3,500,000	1,700,000
AC-4	90,000	85,000	200,000	62,000	80,000
Wire Range					
Power terminals	12–16 stranded, 12–14 solid Cu	8–16 stranded, 10–14 solid Cu	8–14 stranded or solid Cu	2–14 (upper) and/or 6–14 (lower) stranded or solid Cu	1/0–14 Cu
Control terminals	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu
Power terminal torque Line and load—lb-in	7	15	20	40 (14–8 AWG)	35 (14–10 AWG)
				45 (6–4 AWG)	40 (8 AWG)
				50 (3 AWG)	45 (6–4 AWG)
					50 (3–1/0 AWG)
Auxiliary contact rating	A600, P300	A600, P300	A600, P300	A600, P300	A600, P300

Specifications—Sizes 4–8

Description	Contactor Catalog Number/Size CN15N NEMA Size 4	CN15S NEMA Size 5	CN15T NEMA Size 6	CN15U NEMA Size 7	CN15V NEMA Size 8
Configuration					
Number of poles	2, 3	2, 3	3	3	3
Auxiliary contacts, standard	Side NO (1)	Side NO (1)	Top left 2NO/2NC (1)	Top left 2NO/2NC (1)	Side 2NO/NC (1)
Add-on auxiliary contacts	Left side (3) or right side (4)	Left side (3) or right side (4)	Top right 2NO/2NC (1)	Top right 2NO/2NC (1)	NO/NC (2)
Frame size	180 mm	180 mm	280 mm	280 mm	334 mm
Maximum voltage rating	600 Vac	600 Vac	600 Vac	600 Vac	600 Vac
Continuous ampere ratings (I)	135A	270A	540A	810A	1215A
Maximum Horsepower (hp)					
Single-phase					
115V	—	—	—	—	—
230V	—	—	—	—	—
Three-phase					
200V	40	75	150	200	400
230V	50	100	200	300	450
460V	100	200	400	600	900
575V	100	200	400	600	900
AC Magnet Coil Data					
Pick-up volts—cold	85%	85%	85%	85%	85%
Pick-up volts—hot	85%	85%	85%	85%	85%
Pick-up voltamperes	1158	1158	1600	1600	2450
Pick-up watts	240	240	1345	1345	2060
Sealed voltamperes	100	100	25	25	75
Sealed watts	27.2	27.2	22	22	60
Drop-out volts—cold	75%	75%	①	①	①
Drop-out volts—hot	75%	75%	①	①	①
Maximum operation rate—ops/hour	2400	2400	N/A	N/A	N/A
Pick-up time (ms)	28	25	105	105	70
Drop-out time (ms)	14	13	200	200	50
Coil operating range % of rated voltage	–15% to +10%	–15% to +10%	–15% to +10%	–15% to +10%	–15% to +10%
DC magnet coil data	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.	For DC magnet coils (and coil data), see Accessories, **Pages V5-T2-28** and **V5-T2-29**.
Operating temperature	–20° to 65°C	–20° to 65°C	–20° to 65°C	–20° to 65°C	–20° to 65°C
Maximum operating altitude (ft)	6000	6000	6000	6,00	6000
Mechanical life	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
Electrical Life (480V/60 Hz)					
AC-3	800,000	500,000	590,000	450,000	420,000
AC-4	70,000	34,000	7400	5000	4200
Wire Range					
Power terminals	Open—3/0–8 Cu; Enclosed—250 kcmil–6 Cu/Al	750 kcmil—2 or (2) 250 kcmil–3/0 Cu/Al	(2) 750 kcmil–3/0 Cu/Al	(3) 750 kcmil–3/0 Cu/Al	(4) 750 kcmil–1/0 Cu/Al
Control Terminals	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu	12–16 stranded, 12–14 solid Cu
Power terminal torque line and load—lb-in	200	550	550	550	500
Auxiliary contact rating	A600, P300	A600, P300	A600, P300	A600, P300	A600, P300

Note

① 20–30% of rated coil voltage.

Electrical Life—AC-3 and AC-4 Utilization Categories

Life Load Curves

Eaton's Freedom Series NEMA contactors have been designed and manufactured for superior life performance in any worldwide application. All testing has been based on requirements as found in NEMA and UL standards and conducted by Eaton. Actual application life may vary depending on environmental conditions and application duty cycle.

Utilization Categories

The International Electrotechnical Commission (IEC) has developed utilization categories for contactors and auxiliary contacts. The IEC utilization categories are used to define the type of electrical load for estimating electrical life, and do not imply the devices are IEC rated.

AC-1—Non-inductive or slightly inductive loads, such as resistance furnaces and heating.

AC-2—Starting of slip-ring motors.

AC-3—Squirrel cage motors; starting, switching off motors during running.

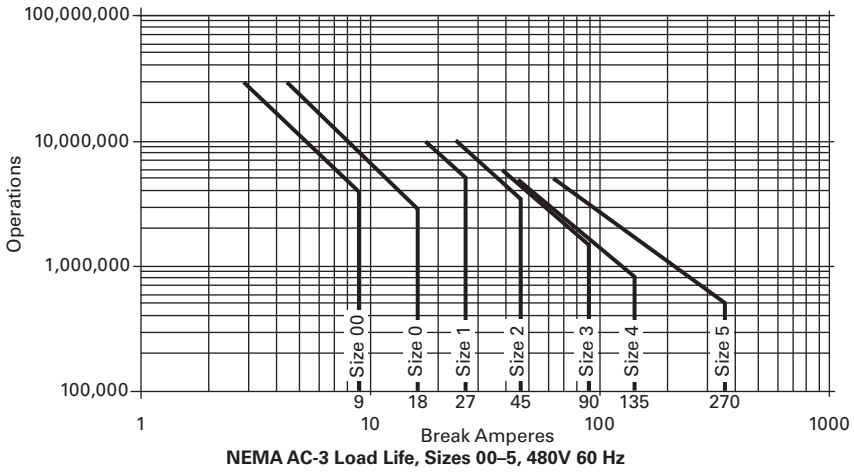
AC-4—Squirrel cage motors; starting, plugging, inching or jogging.

Note: AC-3 tests are conducted at rated device currents and AC-4 tests are conducted at six times rated device currents. All tests have been run at 460V, 60 Hz.

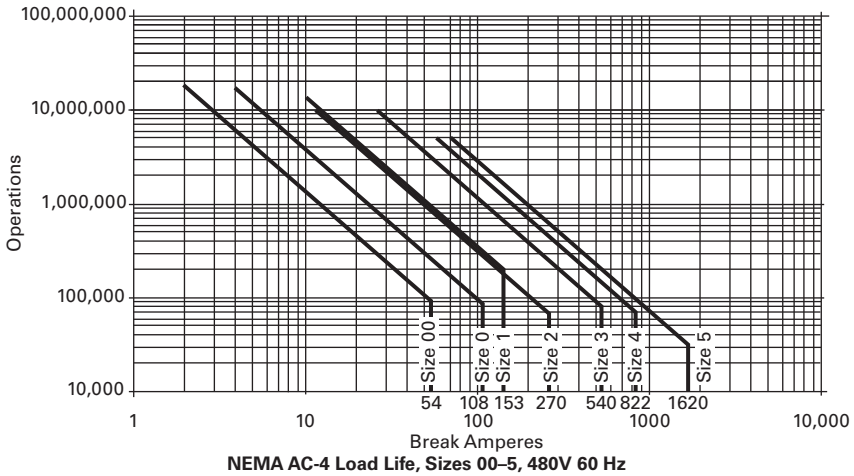
Contactor Choice

- Decide what utilization category your application is and choose the appropriate curve
- Locate the intersection of the life-load curve of the appropriate contactor with the applications operational current (I_e), as found on the horizontal axis
- Read the estimated contact life along the vertical axis in number of operational cycles

AC-3 and AC-4 Utilization Categories



NEMA AC-3 Load Life, Sizes 00–5, 480V 60 Hz



NEMA AC-4 Load Life, Sizes 00–5, 480V 60 Hz