

Electrical Data

		CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85
Rated Insulation Voltage U_i	IEC, AS, BS, SEV, VDE 0660	[V]					690V				
	UL; CSA	[V]					600V				
Rated Impulse Voltage U_{imp}		[kV]					8 kV				
Rated Voltage U_e – Main Contacts	AC 50/60Hz	[V]			115, 200, 208, 230, 240, 380, 400, 415, 460, 500, 575, 690V						
	DC	[V]			24, 48, 110, 115, 220, 230, 300, 440V						
	Operating Frequency for AC Loads	[Hz]					50...60Hz				

Switching Motor Loads

Standard IEC Ratings

AC-2, AC-3, AC-4	230V	[A]	11.5	14.5	20	26.5	34	37	42	62	72	85
DOL & Reversing	240V	[A]	11	14	19	25.5	32.5	36	41	60	70	82
50Hz/60° C	380V	[A]	9	12	16	23	30	37	43	62	72	85
	400V	[A]	9	12	16	23	30	37	43	62	72	85
	415V	[A]	9	12	15	22	29	36	41	58	69	82
	500V	[A]	7	10	13	18	24	30	34	50	56	68
	690V	[A]	5	7	9.3	12	17	20	25	34	42	49
	230V	[kW]	3	4	5.5	7.5	10	11	13	18.5	22	25
	240V	[kW]	3	4	5.5	7.5	10	11	13	18.5	22	25
	380V	[kW]	4	5.5	7.5	11	15	18.5	22	30	37	45
	400V	[kW]	4	5.5	7.5	11	15	18.5	22	30	37	45
	415V	[kW]	4	5.5	7.5	11	15	18.5	22	30	37	45
	500V	[kW]	4	5.5	7.5	11	15	18.5	22	30	37	45
	690V	[kW]	4	5.5	7.5	11	15	18.5	22	30	37	45

UL/CSA

DOL & Reversing	1Ø	115 V	[HP]	1/3	0.5	1	2	2	3	3	5	5	7-1/2
		230 V	[HP]	1	2	3	3	5	5	7-1/2	10	15	15
	3Ø	200 V	[HP]	2	3	5	7	7-1/2	10	10	15	20	25
		230 V	[HP]	2	3	5	7-1/2	10	10	15	20	25	30
		460 V	[HP]	5	7-1/2	10	15	20	25	30	40	50	60
		575 V	[HP]	7-1/2	10	15	15	25	30	30	50	60	60
Maximum Operating Rate		AC2	[ops/hr]	500	500	500	400	400	400	400	300	250	200
		AC3	[ops/hr]	700	700	700	600	600	600	600	500	500	500
		AC4	[ops/hr]	200	150	120	80	80	70	70	70	60	50

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			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85	
Switching Motor Loads (continued)													
AC4 (200,000 Op. Cycles)	50Hz	230V [A]	5.5	7	10	12	15	17	19	28	34	41	
		240V [A]	5.5	7	10	12	15	17	19	28	34	41	
		380V [A]	4.3	6.6	9	10.2	12.2	14.1	16.1	25.5	31	38	
		400V [A]	4.3	6.6	9	10.2	12.2	14.1	16.6	25.5	31.1	38	
		415V [A]	4.3	6.6	9	10.2	12.2	14.1	16.6	25.5	31.1	38	
		230V [kW]	1.6	2	2.8	3.7	4.6	5.2	6.1	8.6	11	13.6	
	240V [kW]	1.5	1.9	2.7	3.5	4.4	5	5.8	8.2	10.5	13		
	380V [kW]	2	3	4	5	6	7	8.5	12.5	16	20		
	400V [kW]	2	3	4	5	6	7	8.5	12.5	16	20		
	415V [kW]	1.9	2.9	3.9	4.8	5.8	6.7	8.2	12	15.4	19.3		
	60Hz	1Ø	115 V [HP]	1/6	1/4	1/3	1/2	1/2	3/4	1	2	2	3
			230 V [HP]	1/2	3/4	1	1-1/2	2	2	3	5	5	7-1/2
		3Ø	200 V [HP]	3/4	1	2	2	3	3	3	7-1/2	7-1/2	10
			230 V [HP]	1	1-1/2	2	3	3	3	5	7-1/2	10	10
			460 V [HP]	2	3	5	5	7-1/2	10	10	15	20	25
575 V [HP]			2	3	5	5	7-1/2	10	10	15	20	25	
Max. Operating Rate [ops/hour]		400	300	240	160	160	140	140	140	120	110		
Wye-Delta (Star Delta)	50 Hz	230V [kW]	5.5	7.5	10	14	18	19	23	33	39	47	
		240V [kW]	5.5	7.5	10	14	18	20	23	34	39	47	
		380V [kW]	8	11	14	21	28	35	40	58	69	82	
		400V [kW]	8	11	14	21	28	35	40	58	69	82	
		415V [kW]	8	11	14	21	28	35	40	58	69	82	
		500V [kW]	8	11	15	21	28	35	40	60	67	82	
	60 Hz	200V [HP]	5	5	7-1/2	7-1/2	10	15	20	30	40	50	
		230V [HP]	5	7-1/2	10	10	15	20	25	40	50	60	
		460V [HP]	10	15	20	25	30	40	50	75	100	125	
		575V [HP]	10	15	20	25	30	40	50	75	100	125	
		Max. Operating Rate [ops/hour]		400	300	240	160	160	140	140	140	120	110
	CSA Elevator Duty (Pending)	Max FLC [A]	8.0	11.0	16.0	21.0	27.0	31.0	37.0	43.0	54.0	62.0	
			200V [A]	7.8	11.0	11.0	17.5	25.3	25.3	32.2	32.2	48.3	62.1
			230V [A]	6.8	9.6	15.2	15.2	22.0	28.0	28.0	42.0	54.0	68.0
			460V [A]	7.6	11.0	14.0	21.0	27.0	27.0	34.0	40.0	52.0	65.0
575V [A]			6.1	9.0	11.0	17.0	22.0	27.0	32.0	41.0	52.0	62.0	
200V [HP]		2	3	3	5	7-1/2	7-1/2	10	10	15	20		
		230V [HP]	2	2	5	5	7-1/2	10	10	15	20	25	
		460V [HP]	5	7-1/2	10	15	20	20	25	30	40	50	
		575V [HP]	5	7-1/2	10	15	20	25	30	40	50	60	
		Max. Operating Rate [ops/hour]		400	300	240	160	160	140	140	140	120	110

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Contactors

CA7

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85	
AC-1 Load, 3Ø Switching	I_{th}	[A]	32	32	32	32	50	50	85	100	100	100	
	Ambient Temperature 40°C	230V	[kW]	13	13	13	13	20	20	34	40	40	40
		240V	[kW]	13	13	13	13	21	21	35	42	42	42
		380V	[kW]	22	22	22	22	35	35	59	69	69	69
		400V	[kW]	22	22	22	22	35	35	59	69	69	69
		415V	[kW]	23	23	23	23	36	36	61	72	72	72
		500V	[kW]	28	28	28	28	43	43	74	82	87	87
		690V	[kW]	38	38	38	38	60	60	102	120	120	120
	I_{th}	[A]	32	32	32	32	45	45	63	100	100	100	
	Ambient Temperature 60°C	230V	[kW]	13	13	13	13	18	18	25	40	40	40
		240V	[kW]	13	13	13	13	19	19	26	42	42	42
		380V	[kW]	22	22	22	22	31	31	44	69	69	69
		400V	[kW]	22	22	22	22	31	31	44	69	69	69
		415V	[kW]	23	23	23	23	32	32	45	72	72	72
500V		[kW]	28	28	28	28	39	39	55	87	87	87	
690V		[kW]	38	38	38	38	54	54	75	120	120	120	
Max Operating Rate	[ops/hour]	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	800	800	600	
Continuous Current (UL/CSA)													
General Purpose Rating (40°C)	Open	[A]	25	25	30	30	45	50	63	90	90	100	
	Enclosed	[A]	25	25	30	30	45	50	63	90	90	100	
Max. Operating Rate	[ops/hour]	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	800	800	600	
Lighting Loads													
Elec. Dischrg. Lamps-AC-5a, single compensated	Open	[A]	29	29	29	29	45	45	77	90	90	90	
	Enclosed	[A]	29	29	29	29	41	41	57	90	90	90	
Max. capacitance at prospective short circuit current available at the contactor.	10kA	[µF]	1,000	1,000	1,000	1,000	2,700	2,700	3,200	4,000	4,000	4,700	
	20kA	[µF]	500	500	500	500	1,350	1,350	1,600	2,000	2,000	2,350	
	50kA	[µF]	200	200	200	200	540	540	640	800	800	940	
Incandescent Lamps - AC-5b, Electrical endurance ~100,000 operations			[A]	22	22	22	22	40	40	46	82	82	82
Switching power transformers AC-6a													
50Hz													
Inrush	= n												
Rated transformer current		[A]	15.4	15.4	15.4	15.4	28.3	28.3	32.5	57.7	57.7	57.7	
n = 30	230 VAC	[kVA]	6.1	6.1	6.1	6.1	11.3	11.0	13.0	23	23	23	
	240 VAC	[kVA]	6.4	6.4	6.4	6.4	11.8	12.0	14.0	24	24	24	
	380 VAC	[kVA]	10.1	10.1	10.1	10.0	19	19	21	38	38	38	
	400 VAC	[kVA]	10.6	10.6	10.6	11.0	20	20	23	40	40	40	
	415 VAC	[kVA]	11.0	11.0	11.0	11.0	20	20	23	42	42	42	
	500 VAC	[kVA]	13.3	13.3	13.3	13.0	24	24	28	50	50	50	
	690 VAC	[kVA]	18.4	18	18	18	34	34	39	69	69	69	
n = 20	[A]		23.1	23.1	23.1	23.1	42.4	42.4	48.8	86.6	86.6	86.6	
	230 VAC	[kVA]	9.2	9.2	9.2	9.2	16.9	16.9	19.4	34.5	34.5	34.5	
	240 VAC	[kVA]	9.6	9.6	9.6	9.6	17.6	17.6	20.3	36	36	36	
	380 VAC	[kVA]	15.2	15.2	15.2	15.2	27.9	27.9	32.1	57	57	57	
	400 VAC	[kVA]	16	16	16	16	29.4	29.4	33.8	60	60	60	
	415 VAC	[kVA]	16.6	16.6	16.6	16.6	30.5	30.5	35.1	62.3	62.3	62.3	
	500 VAC	[kVA]	20	20	20	20	36.7	36.7	42.3	75	75	75	
690 VAC	[kVA]	27.5	27.5	27.5	27.5	50.7	50.7	58.3	103.5	103.5	103.5		
n = 15	[A]		30.7	30.7	30.7	30.7	45	45	63	100	100	100	
	230 VAC	[kVA]	12.2	12.2	12.2	12.2	17.9	17.9	25.1	39.8	39.8	39.8	
	240 VAC	[kVA]	12.8	12.8	12.8	12.8	18.7	18.7	26.2	41.6	41.6	41.6	
	380 VAC	[kVA]	20.2	20.2	20.2	20.2	29.6	29.6	41.5	65.8	65.8	65.8	
	400 VAC	[kVA]	21.3	21.3	21.3	21.3	31.2	31.2	43.6	69.3	69.3	69.3	
	415 VAC	[kVA]	22.1	22.1	22.1	22.1	32.3	32.3	45.3	71.9	71.9	71.9	
	500 VAC	[kVA]	26.6	26.6	26.6	26.6	39	39	54.6	86.6	86.6	86.6	
690 VAC	[kVA]	36.7	36.7	36.7	36.7	53.8	53.8	75.3	119.5	119.5	119.5		

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Switching power transformers AC-6a												
60Hz												
Inrush	= n											
Rated transformer current												
n = 30	200 VAC	[A]	15.4	15.4	15.4	15.4	28.3	28.3	32.5	57.7	57.7	57.7
		[kVA]	5.3	5.3	5.3	5.3	9.8	9.8	11.3	20	20	20
	208 VAC	[kVA]	5.5	5.5	5.5	5.5	10.2	10.2	11.7	20.8	20.8	20.8
	240 VAC	[kVA]	6.4	6.4	6.4	6.4	11.8	11.8	13.5	24	24	24
	480 VAC	[kVA]	12.8	12.8	12.8	12.8	23.5	23.5	27	48	48	48
	600 VAC	[kVA]	16	16	16	16	29.4	29.4	33.8	60	60	60
	660 VAC	[kVA]	17.6	17.6	17.6	17.6	32.3	32.3	37.2	66	66	66
n = 20	200 VAC	[A]	23.1	23.1	23.1	23.1	42.4	42.4	48.8	86.6	86.6	86.6
		[kVA]	8	8	8	8	14.7	14.7	16.9	30	30	30
	208 VAC	[kVA]	8.3	8.3	8.3	8.3	15.3	15.3	17.6	31.2	31.2	31.2
	240 VAC	[kVA]	9.6	9.6	9.6	9.6	17.6	17.6	20.3	36	36	36
	480 VAC	[kVA]	19.2	19.2	19.2	19.2	35.3	35.3	40.6	72	72	72
	600 VAC	[kVA]	24	24	24	24	44.1	44.1	50.7	90	90	90
	660 VAC	[kVA]	26.4	26.4	26.4	26.4	48.5	48.5	55.8	99	99	99
n = 15	200 VAC	[A]	30.7	30.7	30.7	30.7	45	45	63	100	100	100
		[kVA]	10.6	10.6	10.6	10.6	15.6	15.6	21.8	34.6	34.6	34.6
	208 VAC	[kVA]	11.1	11.1	11.1	11.1	16.2	16.2	22.7	36	36	36
	240 VAC	[kVA]	12.8	12.8	12.8	12.8	18.7	18.7	26.2	41.6	41.6	41.6
	480 VAC	[kVA]	25.6	25.6	25.6	25.6	37.4	37.4	52.4	83.1	83.1	83.1
	600 VAC	[kVA]	31.9	31.9	31.9	31.9	46.8	46.8	65.5	103.9	103.9	103.9
	660 VAC	[kVA]	35.1	35.1	35.1	35.1	51.4	51.4	72	114.3	114.3	114.3
DC-1 Switching - 60°C												
1 Pole	24VDC	[A]	32	32	32	32	45	45	50	70	80	80
	48VDC	[A]	20	20	20	20	25	25	30	40	40	40
	60VDC	[A]	20	20	20	20	25	25	30	40	40	40
	110VDC	[A]	8	8	8	8	10	10	10	11	11	11
	220VDC	[A]	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.8	1.8	1.8
	440VDC	[A]	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5
2 Poles in Series	24VDC	[A]	32	32	32	32	45	45	50	70	80	80
	48VDC	[A]	32	32	32	32	45	45	50	70	80	80
	60VDC	[A]	32	32	32	32	45	45	50	70	80	80
	110VDC	[A]	32	32	32	32	45	45	50	70	80	80
	220VDC	[A]	8	8	8	10	10	10	10	15	15	15
	440VDC	[A]	1	1	1	1	1	1	1	1.5	1.5	1.5
3 Poles in Series	24VDC	[A]	32	32	32	32	45	45	63	100	100	100
	48VDC	[A]	32	32	32	32	45	45	63	100	100	100
	60VDC	[A]	32	32	32	32	45	45	63	100	100	100
	110VDC	[A]	32	32	32	32	45	45	63	100	100	100
	220VDC	[A]	32	32	32	32	45	45	50	70	80	80
	440VDC	[A]	3	3	3	3	3.5	3.5	4	5	5	5
DC-2, 3, 5 Switching - 60°C												
3 Poles in Series	24VDC	[A]	32	32	32	32	45	45	63	100	100	100
	48VDC	[A]	32	32	32	32	45	45	50	70	70	80
	60VDC	[A]	32	32	32	32	45	45	50	70	70	80
	110VDC	[A]	20	20	25	25	30	30	35	70	70	80
	220VDC	[A]	6	6	6	10	15	15	20	25	25	30
	440VDC	[A]	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Electrical Data

Contactors

CA7

		CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85	
Capacitor Ratings												
Capacitor Switching - 50Hz												
Single Capacitor - 40°C		230 V [kVar]	5	5	8	10	12.5	19.9	25	39.8	39.8	39.8
		240 V [kVar]	5	5	8	10	12.5	20	25	40	41.6	41.6
		380 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		400 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		415 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		500 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		690 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
Single Capacitor - 60°C		230 V [kVar]	5	5	8	10	12.5	17.9	25	39.8	39.8	39.8
		240 V [kVar]	5	5	8	10	12.5	18.7	25	40	41.6	41.6
		380 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		400 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		415 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		500 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		690 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
Capacitor Bank - 40°C ①		230 V [kVar]	5	5	8	10	12.5	19.9	25	39.8	39.8	39.8
		240 V [kVar]	5	5	8	10	12.5	20	25	40	41.6	41.6
		380 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		400 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		415 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		500 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		690 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
Capacitor Bank - 60°C ①		230 V [kVar]	5	5	8	10	12.5	17.9	25	39.8	39.8	39.8
		240 V [kVar]	5	5	8	10	12.5	18.7	25	40	41.6	41.6
		380 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		400 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		415 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		500 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		690 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
Capacitor Switching - 60Hz												
Single Capacitor - 40°C		200 V [kVar]	5	5	8	10	12.5	17.3	21.8	31.2	31.2	34.6
		230 V [kVar]	5	5	8	10	12.5	17.9	25	39.8	39.8	39.8
		460 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		600 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
Capacitor Bank - 40°C ①		200 V [kVar]	5	5	8	10	12.5	17.3	21.8	31.2	31.2	34.6
		230 V [kVar]	5	5	8	10	12.5	17.9	25	39.8	39.8	39.8
		460 V [kVar]	5	5	8	10	12.5	20	25	40	50	60
		600 V [kVar]	5	5	8	10	12.5	20	25	40	50	60












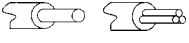
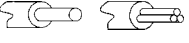










① CA7-9...CA7-30 = L min. 30 µH; CA7-37...CA7-85 = L min. 8 µH

Electrical Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85
Short-Circuit Coordination												
Contactors or Contactors with Solid-State and Bimetallic Overload Relays												
DIN Fuses - gG, gL												
Available Fault Current	[A]						100,000					
Type "1"	[A]		50	50	50	63	100	125	160	200	250	250
Type "2" (380/400/415V)	[A]		20	25	25	35	50	80	100	125	126	160
Type "2" (690V)	[A]		20	25	25	35	50	80	100	125	125	160
BS88 Fuses												
Available Fault Current	[A]						80,000					
Type "1"	[A]		25	32	35	50	63	80	100	100	125	160
Type "2" (690V)	[A]		25	32	35	50	63	80	100	100	125	160
UL Class CC Fuses												
CSA HRCI-MISC Fuses												
Available Fault Current	[A]						100,000					
Type "1" (600V)	[A]		15	20	30	30	~	~	~	~	~	~
Type "2" (600V)	[A]		15	20	30	30	~	~	~	~	~	~
UL Class J Fuses												
UL Class K1, RK1 Fuses												
CSA HRCI- J Fuses												
Available Fault Current	[A]						100,000					
Type "1" (600V)	[A]		15	20	25	30	40	50	50	80	100	100
Type "2" (600V)	[A]		15	20	20	30	40	50	50	80	100	100
UL Class K5 Fuses												
Available Fault Current	[A]		5000	5000	5000	5000	5000	5000	5000	5000	10000	10000
Max. Fuse (600V)	[A]		35	40	70	90	110	125	150	200	250	300
UL Circuit Breaker, inverse time ①												
Available Fault Current	[A]		5000	5000	5000	5000	5000	5000	5000	5000	10000	10000
Max. Breaker (480V)												
with CEP7 overload	[A]		25	30	50	50	~	~	~	~	~	~
with CT7 overload	[A]		25	50	50	50	~	~	~	~	~	~
Max. Breaker (600V)												
with CEP7 overload	[A]		~	~	~	~	70	90	125	150	175	250
with CT7 overload	[A]		~	~	~	~	70	125	125	150	175	250
Short Time Current Withstand Ratings												
I_{tw} 60° C												
1 s	[A]		210	210	290	380	480	525	650	1,110	1,150	1,250
4 s	[A]		140	150	220	280	360	390	480	820	860	910
10 s	[A]		100	120	175	220	290	310	375	640	680	710
15 s	[A]		90	100	150	200	250	270	325	560	600	620
60 s	[A]		60	60	90	125	170	175	200	350	370	380
240 s	[A]		40	40	50	60	100	100	120	190	190	200
900 s	[A]		30	30	38	38	524	60	75	108	108	120
Off Time Between Operations	[Min.]		20	20	20	20	20	20	20	20	20	20
Resistance and Watt Loss I_e AC3												
Resistance per power pole	[mΩ]		2.7	2.7	2.7	2.0	2.0	2.0	1.5	0.9	0.9	0.9
Watt Loss - 3 power poles	[W]		0.7	1.2	2.1	3.2	5.4	8.2	8.3	9.7	14.0	19.5
Coil and 3 power poles												
AC	[W]		3.3	3.8	4.7	6.2	8.4	11.2	11.5	14.2	18.5	24
DC	[W]		6.7	7.2	8.1	12.4	14.6	17.4	18.4	14.6	18.9	24.4
Coil Only												
AC	[W]		2.6	2.6	2.6	3.0	3.0	3.0	3.2	4.5	4.5	4.5
DC	[W]		6.0	6.0	6.0	9.2	9.2	9.2	10.0	4.9	4.9	4.9

① When used as a Branch Circuit Protection device, NEC 430-152 defines the maximum rating of an Inverse-time circuit breaker to be sized at 250% of the motor nameplate FLA for most applications.





Mechanical Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85
Service Life												
Mechanical	AC	[Mil.]	13	13	13	13	13	13	13	10	10	10
	DC	[Mil.]	13	13	13	13	13	13	13	10	10	10
Electrical	AC-3 (400V)	[Mil.]	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1	1	1
Shipping Weights												
AC - CA7		[kg]	0.39	0.39	0.39	0.39	0.48	0.49	0.51	1.45	1.45	1.45
		[Lbs]	0.86	0.86	0.86	0.86	1.06	1.08	1.12	3.20	3.20	3.20
AC - CAU7		[kg]	0.85	0.85	0.85	0.85	1.08	1.08	1.15	3.14	3.14	3.14
		[Lbs]	1.89	1.89	1.89	1.89	2.39	2.39	2.54	6.92	6.92	6.92
DC - CA7		[kg]	0.60	0.60	0.60	0.73	0.85	0.85	1.00	1.47	1.47	1.47
		[Lbs]	1.32	1.32	1.32	1.61	1.87	1.87	2.20	3.24	3.24	3.24
DC - CAU7		[kg]	1.27	1.27	1.27	1.53	1.81	1.81	2.13	3.22	3.22	3.22
		[Lbs]	2.81	2.81	2.81	3.39	4.00	4.00	4.70	7.10	7.10	7.10
Terminations - Power												
Description												
			Combination Screw Head: Cross, Slotted, Pozidrive							Allen Head: 4mm, 5/32		
	1 Wire	[mm ²]	1..4	1..4	1..4	1..4	2.5...10	2.5...10	2.5...16	2.5...35	2.5...35	2.5...35
	2 Wires	[mm ²]	1..4	1..4	1..4	1..4	2.5...10	2.5...10	2.5...10	2.5...25	2.5...25	2.5...25
	1 Wire	[mm ²]	1.5...6	1.5...6	1.5...6	1.5...6	2.5...16	2.5...16	2.5...25	2.5...50	2.5...50	2.5...50
	2 Wires	[mm ²]	1.5...6	1.5...6	1.5...6	1.5...6	2.5...16	2.5...16	2.5...16	2.5...35	2.5...35	2.5...35
	1 Wire	[AWG]	16...10	16...10	16...10	16...10	14...6	14.6	14...6	14...2	14...2	14...2
	2 Wires	[AWG]	16...10	16...10	16...10	16...10	14...6	14.6	14...6	14...2	14...2	14...2
Torque Requirement		[Nm]	1...2.5	1...2.5	1...2.5	1...2.5	1.5...3.5	1.5...5	1.5...3.5	2..6	2..6	2..6
		[Lb-in]	8.9...22	8.9...22	8.9...22	8.9...22	13...31	13...31	13...31	18...52	18...52	18...52
Terminations - Control												
Description												
			Combination Screw Head: Cross, Slotted, Pozidrive									
Coils	1 or 2	[mm ²]						1.5...6				
Wires		[AWG]						16...10				
Control Modules	1 or 2	[mm ²]						1.5...6				
Wires		[AWG]						16...10				
Torque Requirement		[Nm]						1...2.5				
		[Lb-in]						8.9...22				
Degree of Protection - contactor			IP 2LX per IEC 529 and DIN 40 050 (with wires installed)									
Protection Against Accidental Contact			Safe from touch by fingers and back-of-hand per VDE 0106; Part 100									
Environmental and General Specifications												
Ambient Temperature												
Storage			-55...+80° C (-67...176° F)									
Operation			-25...+60° C (-13...140° F)									
Conditioned 15% current reduction after AC-1 at >60° C			-25...+70° C (-13...158° F)									
Altitude at installed site			2000 meters above sea level per IEC 947-4									
Resistance to Corrosion / Humidity			Damp-alternating climate: cyclic to IEC 68-2, 56 cycles. Dry heat: IEC 68-2, +100° C (212° F), relative humidity <50%, 7 days. Damp tropical: IEC 68-2, +40° C (104° F), relative humidity <92%, 56 days.									
Shock Resistance			IEC 68-2: Half sinusoidal shock 11ms, 30g (in all three directions)									
Vibration Resistance			IEC 68-2: Static >2g, in normal position no malfunction <5g									
Pollution Degree			3									
Operating Position			Refer to Dimension Pages									
Standards			IEC947-1/4, EN 60947; UL 508; CSA 22.2, No. 14									
Approvals			CE, UL, CSA									

Coil Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85
Voltage Range												
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[x U_s]	0.85...1.1									
	Dropout	[x U_s]	0.3...0.6									
DC	Pickup	[x U_s]	0.8...1.1 (9V coils = 0.65...1.3; 24V coils = 0.7...1.25)									
	Dropout	[x U_s]	0.1...0.6									
Coil Consumption												
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[VA/W]	70/50	70/50	70/50	70/50	70/50	80/60	130/90	200/110	200/110	200/110
	Hold-in	[VA/W]	8/2.6	8/2.7	8/2.8	9/3	9/3	9/3	10/3.2	16/4.5	16/4.5	16/4.5
DC	Pickup	[W]	6.0	6.0	6.0	9.2	9.2	9.2	10.1	200	200	200
	Hold-in	[W]	6.0	6.0	6.0	9.2	9.2	9.2	10.1	4.5	4.5	4.5
Operating Times												
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[ms]	15...30	15...30	15...30	15...30	15...30	15...30	15...30	18.5...30	18.5...30	18.5...30
	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60
with RC Suppressor	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60
DC	Pickup	[ms]	40...70	40...70	40...70	40...70	50...80	50...80	50...80	20...40	20...40	20...40
	Dropout	[ms]	7...15	7...15	7...15	7...15	7...15	7...15	7...15	—	—	—
with Integ. Suppression	Dropout	[ms]	14...20	14...20	14...20	17...23	17...23	17...23	17...23	20...35	20...35	20...35
with Diode Suppression	Dropout	[ms]	70...95	70...95	70...95	80...125	80...125	80...125	80...125	80...125	80...125	80...125

Auxiliary Contacts

			Built-in Auxiliary Contacts in Contactor CA7-9...CA7-23							Auxiliary Contacts in Accessories CS7-PV, CA7-PA/PV, CZE/A7, CV7, CM7								
Current Switching																		
AC-1 lth	at 40°C	[A]	25							10								
	at 60°C	[A]	20							6								
AC-15, switching electromagnetic loads at:		[V]	24	48	120	240	400	500	600	690	24	48	120	240	400	500	600	690
		[A]	16	16	14	10	5	2.5	1.8	1	6	6	6	3	2	1.5	1.2	0.7
DC-13, switching DC electromagnets at:		[V]	24 48 110 220 440							24 48 110 220 440								
		[A]	5 2 0.7 0.25 0.12							(5) 3 (2) 1.5 (0.7) 0.6 (0.25) 0.3 (0.12) 0.2								
			(CS7-PV, CA7-PV)															
Short-Circuit Protection - gG Fuse																		
Type 2 Coordination		[A]	10							10								
Rated Impulse Voltage U_{imp}		[kV]	8							6								
Insulation Voltage (between control and load circuit) per DIN, VDE 0106, Part 101 (NAMUR recommendation)			[V]	400							Between auxiliary circuits: 250 V, Between load and direct-connected aux. circuits: 690 V							
Contact Reliability (per DIN19240 without contamination, normal industrial atmosphere)			17V, 5 mA, >10 ⁸ operations per error							17V, 5 mA, >10 ⁸ operations per error								
Positively Guided Contacts			Yes, N.O. and N.C. mutually unrestricted							Yes, N.O. and N.C. mutually unrestricted, including N.C. in relation to N.O. Main contacts of contactor do not provide positive guidance with Cat. Nos. CV7 & CZE/A7								
Load carrying capacity per UL/CSA																		
Rated Voltage	AC	[V]	600 max.							600 max.								
Continuous Rating	40°C	[A]	25 general purpose							10 general purpose								
Switching Capacity	AC		Heavy pilot duty (A600)							Heavy pilot duty (A600)								
Rated Voltage	DC	[V]	600 max.							600 max.								
Switching Capacity	DC		Standard pilot duty (P600)							Standard pilot duty (Q600)								
Terminals																		
Terminal Type																		
Maximum Wire Size per IEC 947-1			2 x A4							2 x A4								
	Flexible with Wire-End Ferrule	1 Conductor	[mm ²]	1...4							0.5...2.5							
		2 Conductor	[mm ²]	1...4							0.75...2.5							
	Solid/Stranded-Conductor	1 Conductor	[mm ²]	1.5...6							0.5...2.5							
		2 Conductor	[mm ²]	1.5...6							0.75...2.5							
Recommended Tightening Torque			[Nm]	1...2.5							1...1.5							
Max. Wire Size per UL/CSA			[AWG]	16...10							18...14							
Recommended Tightening Torque			[lb-in]	8.9...22							8.9...13.3							

Determining Contact Life

To determine the contactor's estimated electrical life, follow these guidelines:

1. Identify the appropriate Utilization Category from Table A.
2. On the following pages, choose the graph for the Utilization Category selected.

3. Locate the Rated Operational Current (I_e) along the bottom of the chart and follow the graph lines up to the intersection of the appropriate contactor's life-load curve.
4. Read the estimated contact life along the vertical axis.

Table A – IEC Special Utilization Categories (Number of operations under load) ❶

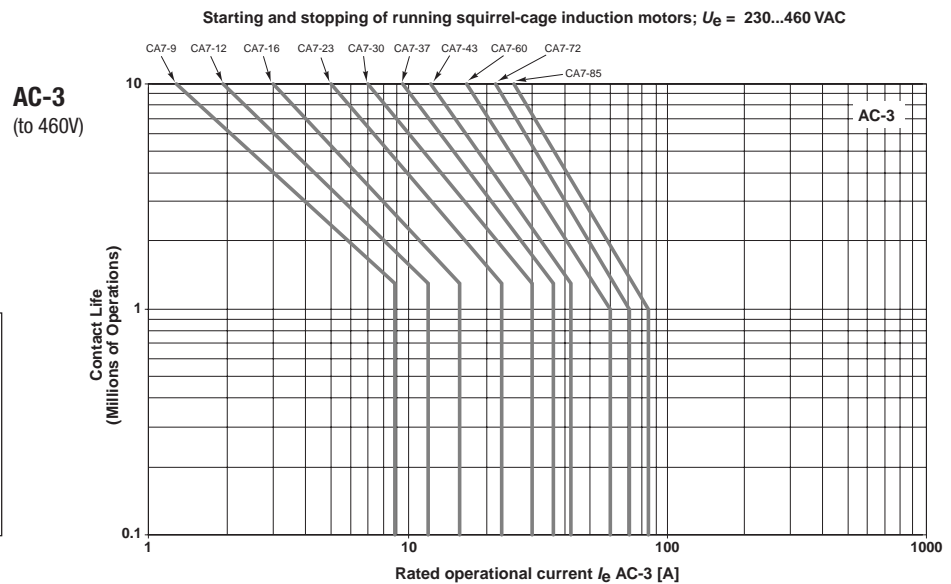
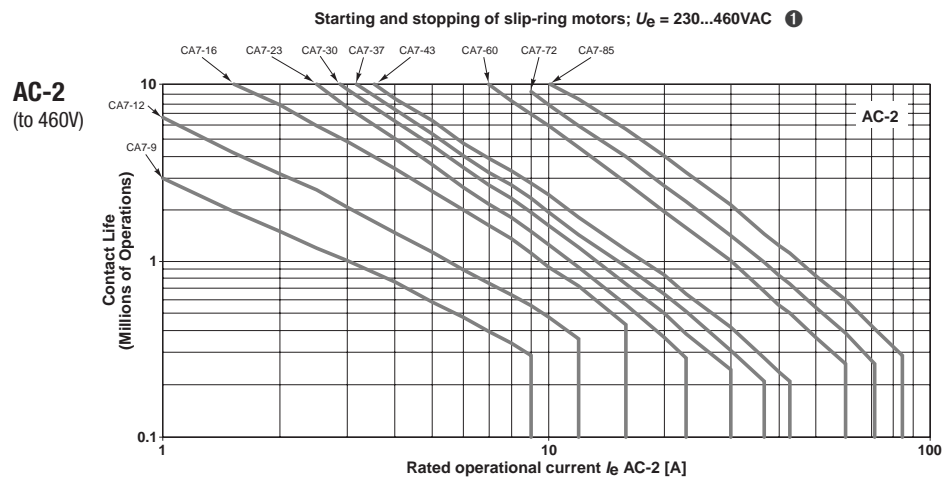
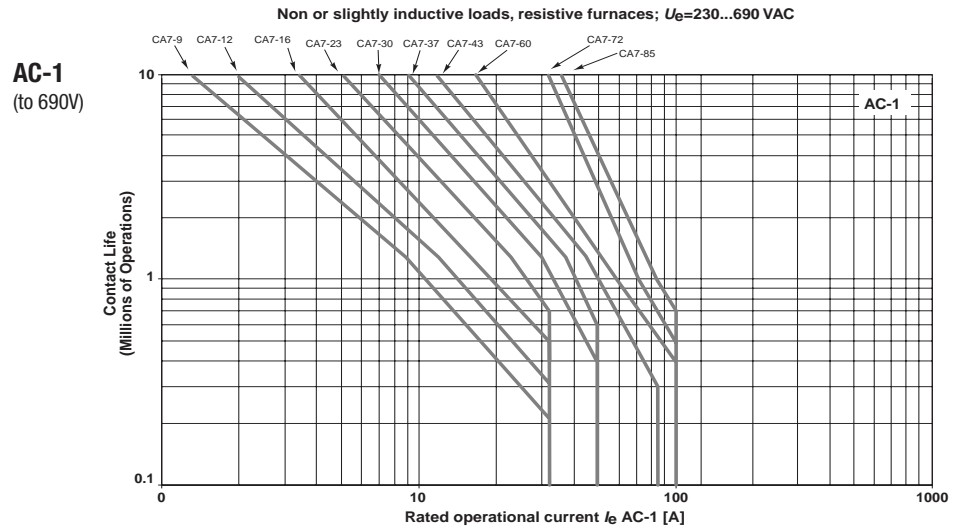
Category	Typical Applications	Rated Current	Conditions for testing electrical life						Conditions for testing making and breaking capacity					
			Make			Break			Make			Break		
			I/I _e	U/U _e	cos	I _c /I _e	U _r /U _e	cos	I/I _e	U/U _e	cos	I _c /I _e	U _r /U _e	cos
AC-1	Non-inductive or slightly inductive loads, resistance furnaces	All values	1	1	0.95	1	1	0.95	1.5	1.05	0.8	1.5	1.05	0.8
AC-2	Slip-ring motors: Starting, plugging	All values	2	1.05	0.65	2	1.05	0.65	4	1.05	0.65	4	1.05	0.65
AC-3	Squirrel-cage motors: Starting, switching off motors during running	I _e ≤ 17Amp 17Amp < I _e ≤ 100Amp I _e > 100Amp	6	1	0.65	1	0.17	0.65	10	1.1	0.65	8	1.1	0.65
			6	1	0.35	1	0.17	0.35	10	1.1	0.35	8	1.1	0.35
			6	1	0.35	1	0.17	0.35	8Ⓜ	1.1	0.35	6Ⓜ	1.1	0.35
AC-4	Squirrel-cage motors: Starting, plugging, inching Ⓜ	I _e ≤ 17Amp 17Amp < I _e ≤ 100Amp I _e > 100Amp	6	1	0.65	6	1	0.65	12	1.1	0.65	10	1.1	0.65
			6	1	0.35	6	1	0.35	12	1.1	0.35	10	1.1	0.35
			6	1	0.35	6	1	0.35	10Ⓜ	1.1	0.35	8Ⓜ	1.1	0.35
AC-5a	Switching of electric discharge lamp control		2	1.05	0.45	2	1.05	0.45	3	1.05	0.45	3	1.05	0.45
AC-5b	Switching of incandescent lamps		1	1.05		1	1.05		1.5	1.05		1.5	1.05	
AC-13	Control of solid state loads with transformer isolation		2	1	0.65	1	1	0.65	10	1.1	0.65	1.1	1.1	0.65
AC-15	Electromagnets for contactors, valves, solenoid actuators		10	1	0.3	1	1	0.3	10	1.1	0.3	10	1.1	0.3
			Make			Break			Make			Break		
			I/I _e	U/U _e	L/R Ⓜ [ms]	I _c /I _e	U _r /U _e	L/R Ⓜ [ms]	I/I _e	U/U _e	L/R Ⓜ [ms]	I _c /I _e	U _r /U _e	L/R Ⓜ [ms]
DC-1	Non-inductive or slightly inductive loads, resistance furnaces	All values	1	1	1	1	1	1	1.5Ⓜ	1.1Ⓜ	1Ⓜ	1.5Ⓜ	1.1Ⓜ	1Ⓜ
DC-2	Shunt-motors: Starting, switching off motors during running	All values	2.5	1	2	1	0.1	7.5	4	1.1	2.5	4	1.1	2.5
DC-3	Shunt-motors: Starting, plugging, inching	All values	2.5	1	2	2.5	1	2	4	1.1	2.5	4	1.1	2.5
DC-4	Series-motors: Starting, switching off motors during running	All values	2.5	1	7.5	1	0.3	10	4	1.1	15	4	1.1	15
DC-5	Series-motors: Starting, plugging, inching	All values	2.5	1	7.5	2.5	1	7.5	4	1.1	15	4	1.1	15
DC-15	Electromagnets for contactors, valves, solenoid actuators		1	1	6 x PⓂ	1	1	6 x PⓂ	1.1	1.1	6 x PⓂ	1.1	1.1	6 x PⓂ

- ❶ Utilization categories and test conditions for AC & DC. For contactors according to IEC 158-1, starters according to IEC 292-1 ... 4 and control switches according to IEC 337-1 and IEC 337-1A.
- Ⓜ With a minimum value of 1000A for I or I_c.
- Ⓜ With a minimum value of 800A for I_c.
- Ⓜ With a minimum value of 1200A for I.
- Ⓜ T_{0.95} for DC-15: Time in milliseconds for reaching 95% of steady-state current I_e x T_{0.95} is 300% of the time constant T = L/R of the circuit.
- Ⓜ P = U_e x I_e rated power [W]. The value "6 x P" has been derived from an empiric relationship which covers most magnetic loads for DC up to an upper limit of P = 50W.
- Ⓜ Only according to VDE.

- Ⓜ Plugging is understood as stopping or reversing the motor rapidly by reversing the motor primary connections while the motor is running. Inching [or jogging] is understood as energizing a motor once or repeatedly for short periods to obtain small movements of the driven mechanism.

Legend	
U_e	Rated operational voltage
U	Voltage before make
U_r	Recovery voltage
I_e	Rated operational current
I	Making current
I_c	Breaking current
L	Inductance of test circuit
R	Resistance of test circuit

Life-Load Curves



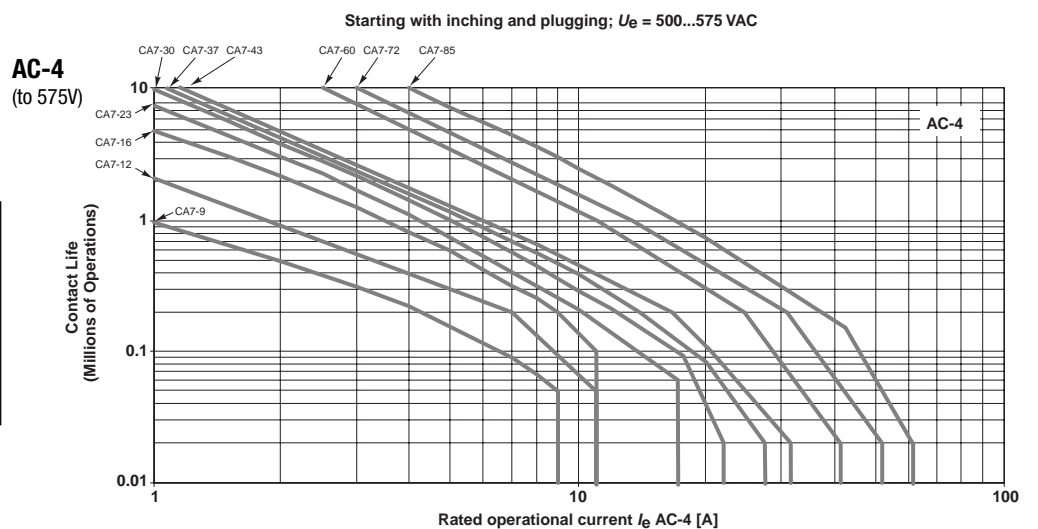
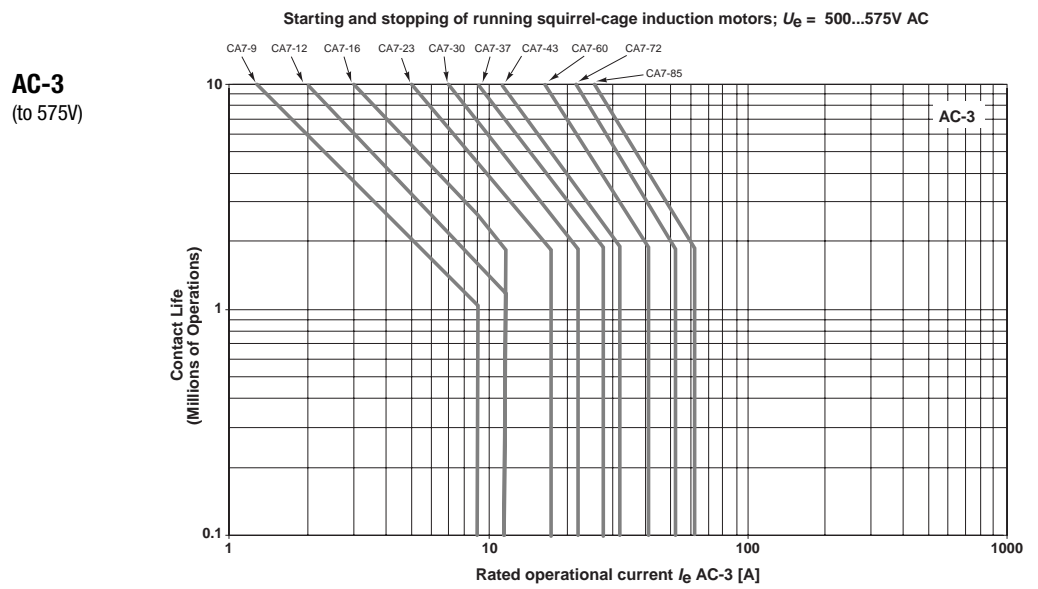
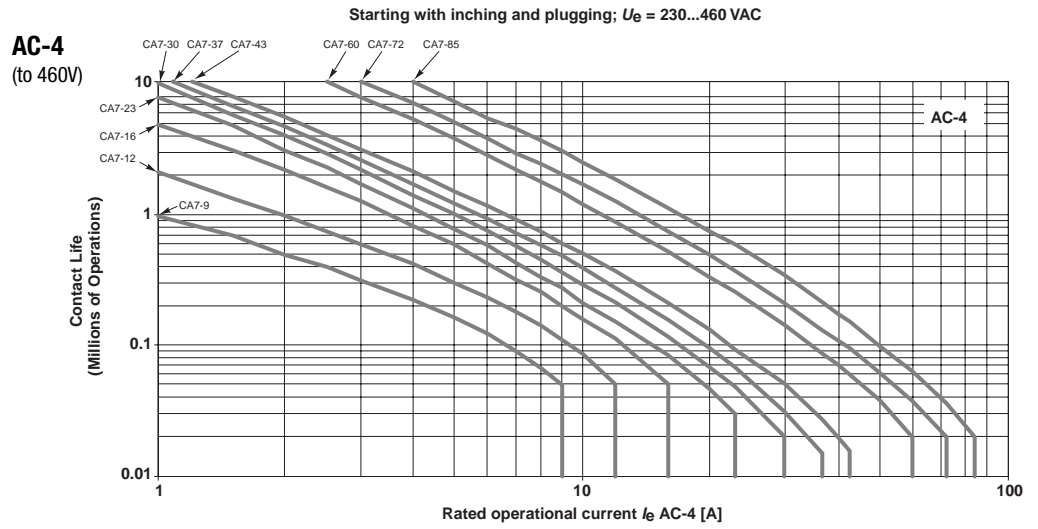
NOTE: The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

① 575V applications use 90% of curve value.

A Life-Load Curves

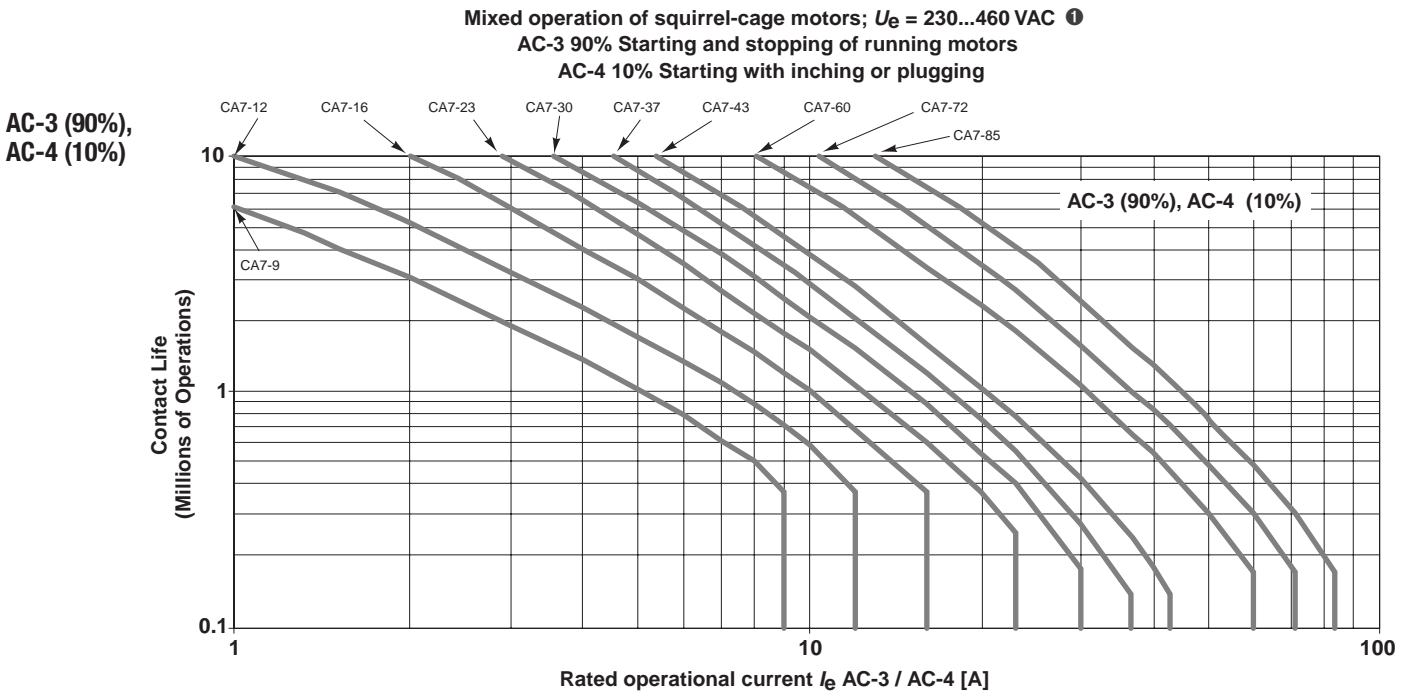
Contactors

CA7



NOTE: The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

Life-Load Curves



**Contact Life for Mixed Utilization Categories
AC-3 and AC-4**

In many applications, the utilization category cannot be defined as either purely AC-3 or AC-4. In those applications, the electrical life of the contactor can be estimated with the following equation:

$$L_{\text{mixed}} = L_{\text{ac3}} / [1 + P_{\text{ac4}} \times (L_{\text{ac3}} / L_{\text{ac4}} - 1)], \text{ where:}$$

- L_{mixed} Approximate contact life in operations for a mixed AC-3/AC-4 utilization category application.
- L_{ac3} Approximate contact life in operations for a pure AC-3 utilization category (from the AC-3 life-load curve).
- L_{ac4} Approximate contact life in operations for a pure AC-4 utilization category (from the AC-4 life-load curve).
- P_{ac4} Percentage of AC-4 operations

NOTE: The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

① 575V applications use 85% of curve value.

Operating Rates

The estimated contact life shown in the life-load curves is based on the standard operating rates shown in Table B below. For applications requiring a higher operating frequency, the maximum operating power (Pn in kW or HP) for a given contactor must be reduced to maintain the same contact life.

To find a contactor’s maximum operating power, for an operating rate greater than shown in Table B, follow these guidelines:

1. Identify the appropriate curve for the contactor and utilization category from Table B.
2. Locate the appropriate Maximum Operating Rate curve on the following pages.
3. Locate the intersection of the curve with the application’s operating rate (ops/hr.) found on the vertical axis.

4. Read the percent of maximum operating power (Pn) of the contactor from the horizontal axis.

5. Multiply the % maximum power by the standard power rating.

Example: The contactor selected for an AC-4 utilization category application is a CA7-16 (10HP at 460V), however, the application requires an operating rate of 200 ops/hr., compared to the standard operating rate of 120 ops/hr. as shown in Table B.

1. Locate the AC-4 Maximum Operating Rate curve on the following pages.
2. Locate the intersection of 200 ops/hr on the CA7-16 curve. The data shows that the maximum operating power of the CA7-16 contactor in this application is 60%.
3. Therefore, the maximum horsepower that can be switched by the CA7-16 contactor in this application is 6 HP (0.60 x 10HP).

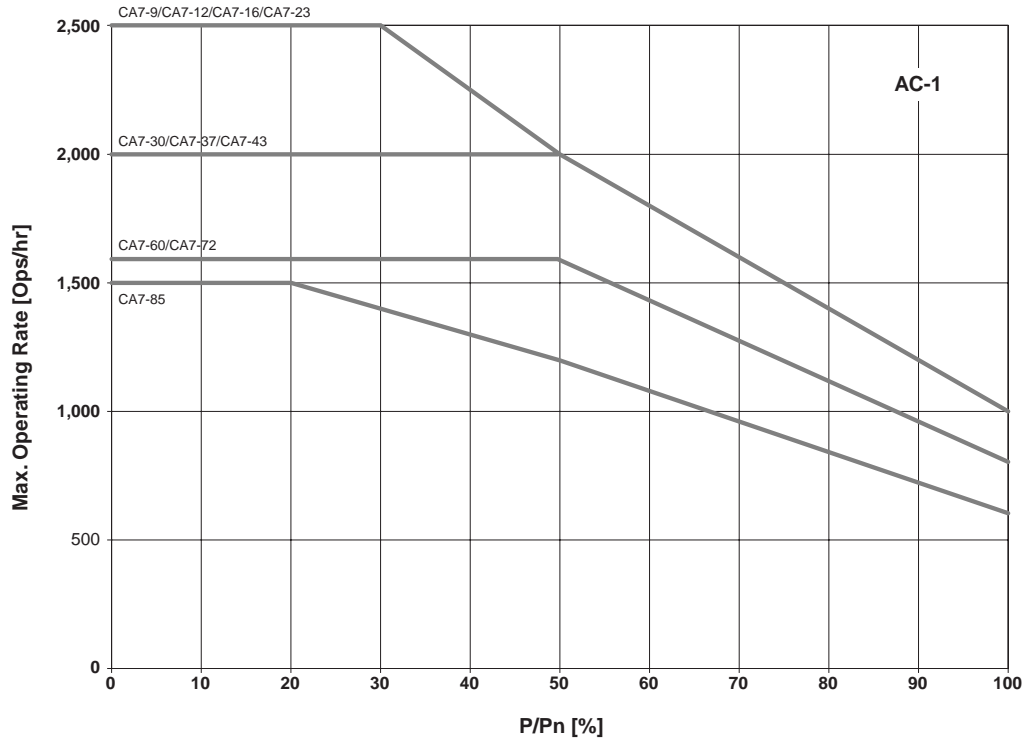
Table B – Standard Operating Rates by Contactor and Utilization Category

Contactor	AC-1	AC-2	AC-3	AC-4	AC-4 @ I _e for 200K ops.
	Max. ops/hr.	Max. ops/hr.	Max. ops/hr.	Max. ops/hr.	Max. ops/hr.
	Operating Parameters and Start Time				
			40% Duty Cycle 250ms	250ms	250ms
CA7-9	1000	500	700	200	400
CA7-12	1000	500	700	150	300
CA7-16	1000	500	700	120	240
CA7-23	1000	400	600	80	160
CA7-30	1000	400	600	80	160
CA7-37	1000	400	600	70	140
CA7-43	1000	400	600	70	140
CA7-60	800	300	500	70	140
CA7-72	800	250	500	60	120
CA7-85	600	200	500	50	140

Operating Rate Curves

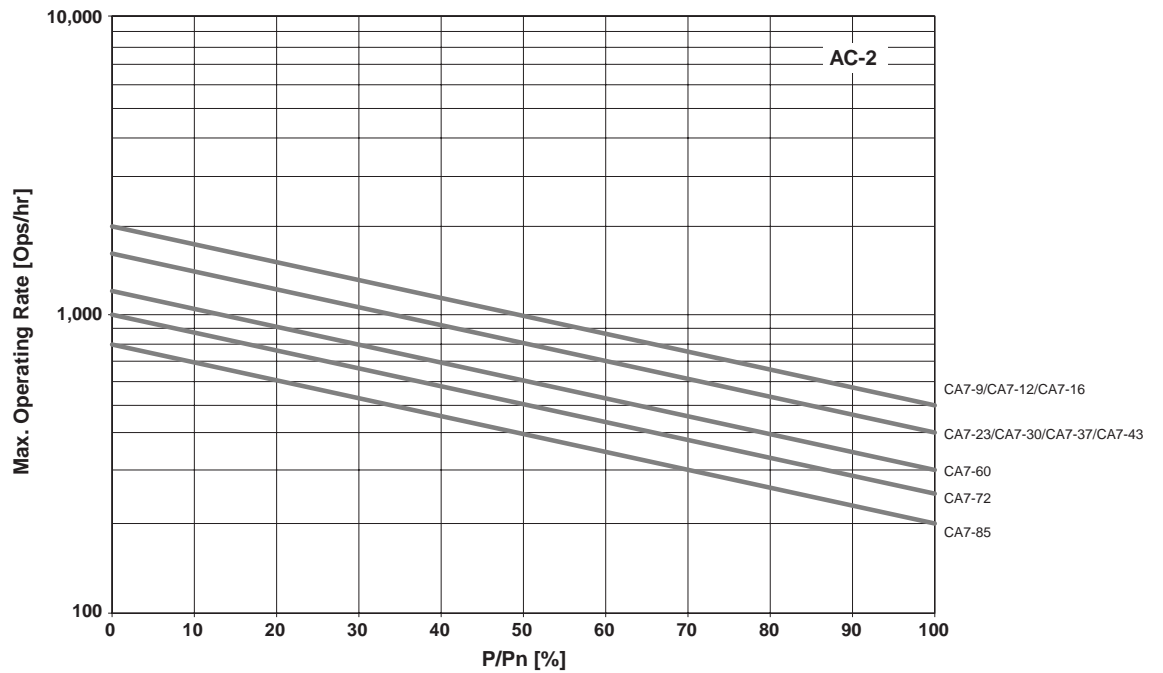
Non or slightly inductive loads, resistance furnaces; $U_e = 380...690$ VAC

AC-1



Slip-ring motors: starting, switching off; $U_e = 380...460$ VAC

AC-2



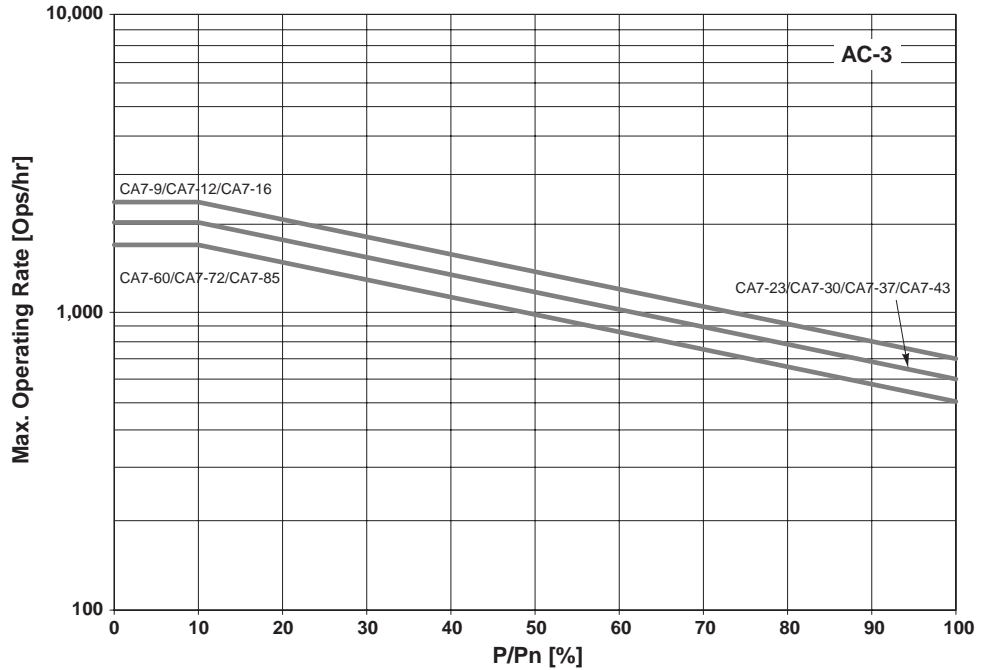
Operating Rate Curves

Contactors

CA7

AC-3

Squirrel-cage motors: starting, switching off motors during running; $U_e = 380...460$ VAC
250ms Start time, 40% Duty Cycle



AC-4

Squirrel-cage motors: starting, plugging, inching; $U_e = 380...460$ VAC
250ms Start-up

