

Freedom Series

NEMA (National Electrical Manufacturers' Association) is comprised of 630 members, most of whom are North American manufacturers of electrical and electronic products. NEMA has developed product design standards and test specifications for device qualification, many of which have been adopted by UL. The primary goal of NEMA is to establish standardization within the North American electrical industry.

NEMA specifies the ratings a contactor or starter must carry in order to be labeled with a "NEMA Size" designation. The intent is to provide for and encourage safe interchangeability among manufacturers' products regardless of manufacturer and type of load/application. The ratings of full-voltage magnetic controllers, reversing and non-reversing, shall be:

Table 2-321-1
Ratings for three phase single speed full voltage magnetic controllers for non-plugging and non-jogging duty

Size of Controller	Continuous Current Rating* Amperes	Horsepower‡ at				Service-Limit Current Rating* Amperes
		60 Hertz		50 Hertz 380 Volts	60 Hertz 460 or 575 Volts	
		200 Volts	230 Volts			
00	9	1-1/2	1-1/2	1-1/2	2	11
0	18	3	3	5	5	21
1	27	7-1/2	7-1/2	10	10	32
2	45	10	15	25	25	52
3	90	25	30	50	50	104
4	135	40	50	75	100	156
5	270	75	100	150	200	311
6	540	150	200	300	400	621
7	810	---	300	---	600	932
8	1215	---	450	---	900	1400
9	2250	---	800	---	1600	2590

* See ICS 2-321.20

‡ These horsepower ratings are based on the locked-rotor current ratings given in Table 2-327-1. For motors having higher locked-rotor currents, a larger controller should be used so that its locked-rotor current rating is not exceeded. (This note is approved as Authorized Engineering Information.)



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Table 2-327-1
Ratings for three phase single speed full voltage magnetic controllers for non-plugging and non-jogging duty

Size of Controller	Continuous Current Rating* Amperes	Locked-Rotor Current Amperes at					Service-Limit Current Rating* Amperes
		60 Hertz		50 Hertz 380 Volts	60 Hertz		
		200 Volts	230 Volts		460 Volts	575 Volts	
00	9	46	40	30	25	20	11
0	18	74	70	64	53	42	21
1	27	152	140	107	88	70	32
2	45	255	255	255	210	168	52
3	90	500	500	500	418	334	104
4	135	835	835	835	835	668	156
5	270	1670	1670	1670	1670	1334	311
6	540	3340	3340	3340	3340	2670	621
7	810	5000	5000	5000	5000	4000	932
8	1215	7500	7500	7500	7500	6000	1400
9	2250	13400	13400	13400	13400	10700	2590

* See ICS 2-327.20

Table 2-321-3
Ratings for three phase single speed full voltage magnetic controllers for plug-stop, plug-reverse or jogging duty

Size of Controller	Continuous Current Rating* Amperes	Horsepower‡ at				Service-Limit Current Rating* Amperes
		60 Hertz		50 Hertz 380 Volts	60 Hertz 460 or 575 Volts	
		200 Volts	230 Volts			
0	18	1-1/2	1-1/2	1-1/2	2	21
1	27	3	3	5	5	32
2	45	7-1/2	10	15	15	52
3	90	15	20	30	30	104
4	135	25	30	50	60	156
5	270	60	75	125	150	311
6	540	125	150	250	300	621

* See ICS 2-321.20

‡ These horsepower ratings are based on the locked-rotor current ratings given in Table 2-327-3. For motors having higher locked-rotor currents, a larger controller should be used so that its locked-rotor current rating is not exceeded. (This note is approved as Authorized Engineering Information.)

Table 2-327-3
Ratings for three phase single speed full voltage magnetic controllers for plug-stop, plug-reverse and jogging duty

Size of Controller	Continuous Current Rating* Amperes	Locked-Rotor Current Amperes at					Service-Limit Current Rating* Amperes
		60 Hertz		50 Hertz 380 Volts	60 Hertz		
		200 Volts	230 Volts		460 Volt	575 Volt	
0	18	46	40	30	25	20	21
1	27	74	70	63	52	42	32
2	45	175	175	154	127	102	52
3	90	335	335	300	250	200	104
4	135	500	500	500	500	400	156
5	270	1250	1250	1250	1250	1000	311
6	540	2500	2500	2500	2500	2000	621
7	810	3750	3750	3750	3750	3000	932
8	1215	5625	5625	5625	5625	4500	1400
9	2250	10000	10000	10000	10000	8000	2590

* See ICS 2-327.20

The entire family of Freedom Series NEMA rated contactors and starters meet all NEMA ratings, standards and requirements as published in NEMA Standards Publication ICS 2-321. The Freedom Series NEMA starters and contactors are tested to the criteria below which meets or exceeds NEMA and EATON standards.

Test Description	Primary Criteria	Test Standard	
		Eaton	Other
Temperature Elevated temperature mechanical life Low temperature mechanical life	65° ambient to end of life -50° ambient to end of life Per UL508	047-011	
Over/Under Voltage Electrical Performance Ac motor NEMA test AC1 resistive load AC2 slip ring AC3 inductive load AC4 motor load Capacitor loads Elevator loads Auxiliary contacts (A600) Low level Logic level Reliability ring test	Make/Break 10X device rating, 10 operations 1X device rating 2.5X device rating 6X/1X device rating, 1.1 million ops. 6X/6X, 50K typical operations Per CSA 6X/1X device rating, 250K ops. 20 million at 20V dc, 1 million ops. 5 million at 5V dc 20 million switches/miss	0467-003	
Mechanical Life 00-2 3 4, 5 6, 7, 8	15 million 10 million 5 million 1 million	0467-013	
Environmental Shock and vibration Humidity/corrosion Shipping/drop	MIL STD 202 as specified MIL STD as specified Eaton	0467-014 0467-015 0467-016	
Other Performance Standards IEC International Ford Spec	See IEC 947 See Spec		
Arc Rupture Evaluate Magnet Coil Operational Characteristics	Per hp rating, 50 operations Construction and performance Operating time Transfer Switch time Bounce time Coil Power	0467-004 0467-008 Pickup/ dropout	0467-002



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