

FULL-LOAD CURRENTS OF DC MOTORS*

(RUNNING AT BASE SPEED)

*For conductor sizing only.

FULL-LOAD CURRENT IN AMPERES†

HP	RATED ARMATURE VOLTAGE					
	90V	120V	180V	240V	500V	550V
.25	4.0	3.1	2.0	1.6	—	—
.33	5.2	4.1	2.6	2.0	—	—
.5	6.8	5.4	3.4	2.7	—	—
.75	9.6	7.6	4.8	3.8	—	—
1	12.2	9.5	6.1	4.7	—	—
1.5	—	13.2	8.3	6.6	—	—
2	—	17	10.8	8.5	—	—
3	—	25	16	12.2	—	—
5	—	40	27	20	—	—
7.5	—	58	—	29	13.6	12.2
10	—	76	—	38	18	16
15	—	—	—	55	27	24
20	—	—	—	72	34	31
25	—	—	—	89	43	38
30	—	—	—	106	51	46
40	—	—	—	140	67	61
50	—	—	—	173	83	75
60	—	—	—	206	99	90
75	—	—	—	255	123	111
100	—	—	—	341	164	148
125	—	—	—	425	205	185
150	—	—	—	506	246	222
200	—	—	—	675	330	294
OVER 200 HP						
Approx. Amps/hp	—	—	—	3.4	1.7	1.5

†These are average direct-current quantities.

Branch-circuit conductors supplying a single motor shall have an ampacity not less than 125 percent of the motor full-load current rating.

Armature current varies inversely as applied voltage.

Example: 40 hp motor, 300 volt armature

$$\text{Armature current} = 140 \times \frac{240}{300} = 112 \text{ amps}$$

The above table is based on Table 430.147 of the *National Electrical Code*®, 2002. *National Electrical Code*® and NEC® are registered trade marks of the National Fire Protection Association, Inc. Quincy, MA 02269.

FULL-LOAD CURRENTS

THREE-PHASE SQUIRREL CAGE AND WOUND-ROTOR MOTORS*

*For conductor sizing only

FULL-LOAD CURRENT IN AMPERES

HP	200V	208V	230V	460V	575V	2300V	4000V
.5	2.5	2.4	2.2	1.1	0.9	—	—
.75	3.7	3.5	3.2	1.6	1.3	—	—
1	4.8	4.6	4.2	2.1	1.7	—	—
1.5	6.9	6.6	6.0	3.0	2.4	—	—
2	7.8	7.5	6.8	3.4	2.7	—	—
3	11.0	10.6	9.6	4.8	3.9	—	—
5	17.5	16.7	15.2	7.6	6.1	—	—
7.5	25.3	24.2	22	11	9	—	—
10	32.2	30.8	28	14	11	—	—
15	48.3	46.2	42	21	17	—	—
20	62.1	59.4	54	27	22	—	—
25	78.2	74.8	68	34	27	—	—
30	92	88	80	40	32	—	—
40	120	114	104	52	41	—	—
50	150	143	130	65	52	—	—
60	177	169	154	77	62	16	9
75	221	211	192	96	77	20	11
100	285	273	248	124	99	26	14
125	359	343	312	156	125	31	18
150	414	396	360	180	144	37	21
200	552	528	480	240	192	49	28
250	—	—	—	302	242	60	35
300	—	—	—	361	289	72	41
350	—	—	—	414	336	83	48
400	—	—	—	477	382	95	55
450	—	—	—	515	412	103	59
500	—	—	—	590	472	118	68
OVER 200 HP							
Approx. Amps/hp	2.75	2.64	2.4	1.2	.96	.24	.14

Branch-circuit conductors supplying a single motor shall have an ampacity not less than 125 percent of the motor full-load current rating. Based on Table 430.150 of the *National Electrical Code*,[®] 2002.

FULL-LOAD CURRENTS

THREE-PHASE SYNCHRONOUS MOTORS (UNITY POWER FACTOR) AND SINGLE-PHASE MOTORS*

*For conductor sizing only

THREE-PHASE SYNCHRONOUS MOTORS FULL-LOAD CURRENT IN AMPERES

HP	RATED VOLTAGE			
	460V	575V	2300V	4000V
100	100	80	20	12
125	125	100	25	14
150	150	120	30	17
200	200	160	40	23
250	250	200	50	29
300	300	240	60	35
350	353	282	71	41
400	403	322	80	46
500	500	400	100	58
600	600	480	120	69
700	705	564	141	81
800	805	644	161	93
900	905	724	181	104
1000	960	768	192	110

SINGLE-PHASE MOTORS

FULL-LOAD CURRENT IN AMPERES

HP	RATED VOLTAGE			
	115V	200V	208V	230V
.167	4.4	2.5	2.4	2.2
.25	5.8	3.3	3.2	2.9
.34	7.2	4.1	4.0	3.6
.5	9.8	5.6	5.4	4.9
.75	13.8	7.9	7.6	6.9
1	16	9.2	8.8	8
1.5	20	11.5	11	10
2	24	13.8	13.2	12
3	34	19.6	18.7	17
5	56	32.2	30.8	28
7.5	80	46	44	40
10	100	57.5	55	50

Branch-circuit conductors supplying a single motor shall have an ampacity not less than 125 percent of the motor full-load current rating.

Based on Table 430.148 of the *National Electrical Code*®, 2002.

MAXIMUM LOCKED-ROTOR CURRENTS

THREE-PHASE SQUIRREL CAGE MOTORS

NEMA DESIGNS B, C AND D

LOCKED-ROTOR CURRENT IN AMPERES

HP	RATED VOLTAGE, 60 Hz					
	200V	230V	460V	575V	2300V	4000V
.5	23	20	10	8		
.75	29	25	12	10		
1	34	30	15	12		
1.5	46	40	20	16		
2	57	50	25	20		
3	74	64	32	26		
5	106	92	46	37		
7.5	146	127	63	51		
10	186	162	81	65		
15	267	232	116	93		
20	333	290	145	116		
25	420	365	182	146		
30	500	435	217	174		
40	667	580	290	232		
50	834	725	362	290		
60	1000	870	435	348	87	50
75	1250	1085	542	434	108	62
100	1665	1450	725	580	145	83
125	2085	1815	907	726	181	104
150	2500	2170	1085	868	217	125
200	3335	2900	1450	1160	290	167
250	4200	3650	1825	1460	365	210
300	5060	4400	2200	1760	440	253
350	5860	5100	2550	2040	510	293
400	6670	5800	2900	2320	580	333
450	7470	6500	3250	2600	650	374
500	8340	7250	3625	2900	725	417

The locked-rotor current of Design B, C and D constant-speed induction motors, when measured with rated voltage and frequency impressed and with rotor locked, shall not exceed the above values.

Reference: NEMA MG 1-1998 (Rev. 3), 12.35.1. See NEMA MG 1-1998 (Rev. 3), 12.35.3 for 50 Hz, 380 volts.