



FULL LOAD CURRENTS **GUIDE**

TECHNICAL INFORMATION EDUCATION SERIES



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.



Source The Electrical Engineering Pocket Handbook
Electrical Apparatus Service Association



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