

### Full-Load Current in Amperes Direct-Current Motors

HP	90V	120V	180V	240V	500V	550V
1/4	4.0	3.1	2.0	1.6	—	—
1/3	5.2	4.1	2.6	2.0	—	—
1/2	6.8	5.4	3.4	2.7	—	—
3/4	9.6	7.6	4.8	3.8	—	—
1	12.2	9.5	6.1	4.7	—	—
1 1/2	—	13.2	8.3	6.6	—	—
2	—	17	10.8	8.5	—	—
3	—	25	16	12.2	—	—
5	—	40	27	20	—	—
7 1/2	—	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

### Full-Load Current Two-Phase Alternating-Current Motors (4 wire)

HP	115V	230V	460V	575V	2300V
1/2	4	2	1	0.8	—
3/4	4.8	2.4	1.2	1.0	—
1	6.4	3.2	1.6	1.8	—
1 1/2	9	4.5	2.3	1.8	—
2	11.8	5.9	3	2.4	—
3	—	8.3	4.2	3.3	—
5	—	13.2	6.6	5.3	—
7 1/2	—	19	9	8	—
10	—	24	12	10	—
15	—	36	18	14	—
20	—	47	23	19	—
25	—	59	29	24	—
30	—	69	35	28	—
40	—	90	45	36	—
50	—	113	56	45	—
60	—	133	67	53	14
75	—	166	83	66	18
100	—	218	109	87	23
125	—	270	135	108	28
150	—	312	156	125	32
200	—	416	208	167	43

For 90 and 80% power factor, the above figures should be multiplied by 1.1 and 1.25 respectively.

### Full-Load Current in Amperes Single-Phase Alternating Current Motors

HP	115V	200V	208V	230V
1/6	4.4	2.5	2.4	2.2
1/4	5.8	3.3	3.2	2.9
1/3	7.2	4.1	4	3.6
1/2	9.8	5.6	5.4	4.9
3/4	13.8	7.9	7.6	6.9
1	16	9.2	8.8	8
1 1/2	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 1/2	80	46	44	40
10	100	57.5	55	50

The voltages listed are rated motor voltages. The listed currents are for system voltage ranges of 110 to 120 and 220 to 240.

### Running Overload Units

Kind of Motor	Supply System	Number and Location of Over-Load Units, Such as Trip Coils or Relays
1-Phase AC or DC	2-wire, 1-phase AC or DC, ungrounded	1 in either conductor
1-Phase AC or DC	2-wire, 1-phase AC or DC, one conductor ungrounded	1 in ungrounded conductor
1-Phase AC or DC	3-wire, 1-phase AC or DC, grounded neutral	1 in either ungrounded conductor
1-Phase AC	Any 3-phase	1 in ungrounded conductor
2-Phase AC	3-wire, 2-phase AC, ungrounded	2, one in each phase
2-Phase AC	3-wire, 2-phase AC, one conductor grounded	2 in ungrounded conductors
2-Phase AC	4-wire, 2-phase AC, grounded or ungrounded	2, one per phase in ungrounded conductors
2-Phase AC	5-wire, 2-phase AC, grounded neutral or ungrounded	2, one per phase in any ungrounded phase wire
3-Phase AC	Any 3-phase	3, one in each phase*

\* Exception: Where protected by other approved means.

### Motor Branch—Circuit Protective Devices Maximum Rating or Setting

Type of Motor	PERCENT OF FULL-LOAD CURRENT			
	Non-Time Delay Fuse**	Dual Element (Time-Delay) Fuse**	Instantaneous Trip Breaker	Time
Inverse Breaker*				
Single-phase motors	300	175	800	250
AC polyphase motors other than wound-rotor Squirrel Cage:				
Other than design E	300	175	800	250
Design E	300	175	1100	250
Synchronous	300	175	800	250
Wound rotor	150	150	800	150
Direct-current (constant voltage) 150	150	150	250	150

\* The values given in the last column also cover the ratings of non-adjustable inverse time types of circuit breakers that may be modified

\*\* The values in the Non-time Delay Fuse column apply to time delay class CC fuses

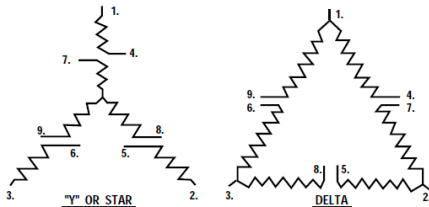
### Full-Load Current Three-Phase Alternating Current Motors

HP	Induction Type Squirrel-Cage and Wound-Rotor Amperes						Synchronous Type Unity Power Factor* Amperes				
	115 Volts	200 Volts	208 Volts	230 Volts	460 Volts	575 Volts	2300 Volts	230 Volts	460 Volts	575 Volts	2300 Volts
1/2	4.4	2.5	2.4	2.2	1.1	0.9	—	—	—	—	—
3/4	6.4	3.7	3.5	3.2	1.6	1.3	—	—	—	—	—
1	8.4	4.8	4.6	4.2	2.1	1.7	—	—	—	—	—
1 1/2	12.0	6.9	6.6	6.0	3.0	2.4	—	—	—	—	—
2	13.6	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 3/4	—	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	—	53	26	21	—
30	—	92	88	80	40	32.2	—	63	32	26	—
40	—	120	114	104	52	41	—	83	41	33	—
50	—	150	143	130	65	52	—	104	52	42	—
60	—	177	169	154	77	62	16	123	61	49	12
75	—	221	211	192	96	77	20	155	78	62	15
100	—	285	273	248	124	99	26	202	101	81	20
125	—	359	343	312	156	125	31	253	126	101	25
150	—	414	396	360	180	144	37	302	151	121	30
200	—	552	528	480	240	192	49	400	201	161	40
250	—	—	—	—	302	242	60	—	—	—	—
300	—	—	—	—	361	289	72	—	—	—	—
350	—	—	—	—	414	336	83	—	—	—	—
400	—	—	—	—	477	382	95	—	—	—	—
450	—	—	—	—	515	412	103	—	—	—	—
500	—	—	—	—	590	472	118	—	—	—	—

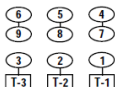
The voltages listed are rated motor voltages. The currents listed shall be permitted for system voltage ranges of 110 to 120, 220 to 240, 440 to 480, and 550-600 volts.

\* For 90 and 80 percent power factor, the above figures shall be multiplied by 1.1 and 1.25, respectively.

#### Three Phase AC Motor Windings and Connections



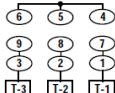
#### HIGH VOLTAGE



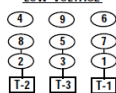
#### HIGH VOLTAGE



#### LOW VOLTAGE



#### LOW VOLTAGE



#### NOTE

THE MOST IMPORTANT PART OF ANY MOTOR IS THE NAME-PLATE. CHECK THE DATA GIVEN ON THE PLATE BEFORE MAKING THE CONNECTIONS.

TO CHANGE ROTATION DIRECTIONS OF 3 PHASE MOTOR, SWAP ANY 2 T-LEADS

### Full-Load Current and Other Data Three Phase AC Motors

Motor Horsepower	Motor Voltage	Motor Ampere	Size Breaker	Size Starter	Heater Ampere	Size Wire	Size Conduit
1/2	230V	2.2	15	00	2.530	12	3/4"
	460	1.1	15	00	1.265	12	3/4"
3/4	230	3.2	15	00	3.680	12	3/4"
	460	1.6	15	00	1.840	12	3/4"
1	230	4.2	15	00	4.830	12	3/4"
	460	2.1	15	00	2.415	12	3/4"
1 1/2	230	6.0	15	00	6.900	12	3/4"
	460	3.0	15	00	3.450	12	3/4"
2	230	6.8	15	0	7.820	12	3/4"
	460	3.4	15	00	3.910	12	3/4"
3	230	9.6	15	0	11.040	12	3/4"
	460	4.8	15	0	5.520	12	3/4"
5	230	15.2	15	1	17.480	12	3/4"
	460	7.6	15	0	8.740	12	3/4"
7 1/2	230	22	40	1	25.300	10	3/4"
	460	11	30	1	12.650	12	3/4"
10	230	28	50	2	32.200	10	3/4"
	460	14	30	1	16.100	12	3/4"
15	230	42	70	2	48.300	6	1"
	460	21	40	2	24.150	10	3/4"
20	230	54	100	3	62.100	6	1"
	460	27	50	2	31.050	10	3/4"
25	230	68	100	3	78.200	4	1 1/2"
	460	34	50	2	39.100	8	1"
30	230	80	125	3	92.000	3	1 1/2"
	460	40	70	3	46.000	8	1"
40	230	104	175	4	119.600	1	1 1/2"
	460	52	100	3	59.800	6	1"
50	230	130	200	4	149.500	00	2"
	460	65	150	3	74.750	4	1 1/2"
60	230	154	250	5	177.10	000	2"
	460	77	200	4	88.55	3	1 1/2"
75	230	192	300	5	220.80	250	2 1/2"
	460	96	200	4	110.40	2	1 1/2"
100	230	248	400	5	285.20	350	3"
	460	124	200	4	142.60	0	2"
125	230	312	500	6	358.80	600	3 1/2"
	460	156	250	5	179.40	000	2"
150	230	360	600	6	414.00	700	4"
	460	180	300	5	207.00	0000	2 1/2"

#### Note:

1. Wire and conduit size will vary depending on type of insulation and termination listing.
2. The preceding calculations apply to induction type, squirrel-cage, and wound-rotor motors only.
3. The voltages listed are rated motor voltages; corresponding nominal system voltages are 220V to 240V, and 440V to 480V
4. Hertz: Preferred terminology for cycles per second.
5. Form coil: Coil made with rectangular or square wire.
6. Mush coil: Coil made with round wire.
7. Slip: Percentage difference between synchronous and operating speeds.
8. Synchronous speed: Maximum speed for A.C. motors or (Frequency x 120)/ Poles.
9. Full load: Speed at which rated horsepower is developed.
10. Poles: Number of magnetic poles set up inside the motor by the placement and connection of the windings.