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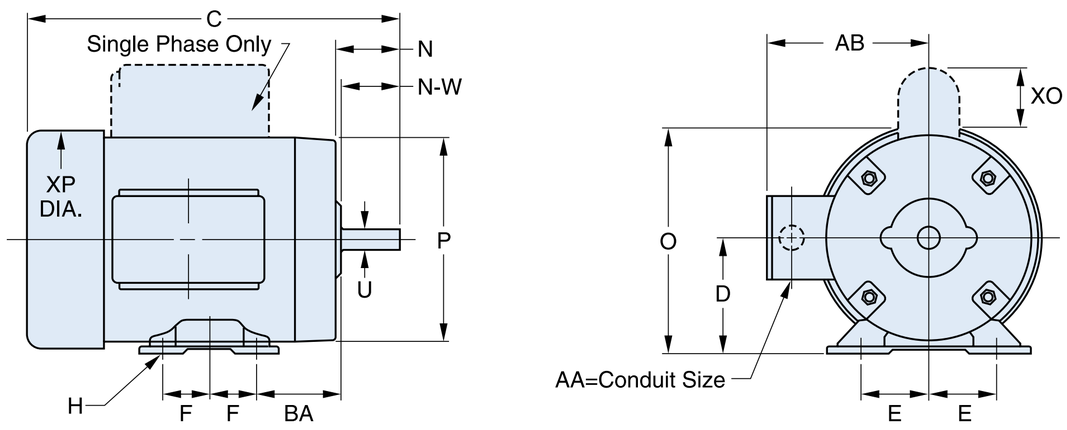
QUICK REFERENCE MOTOR DIMENSIONS

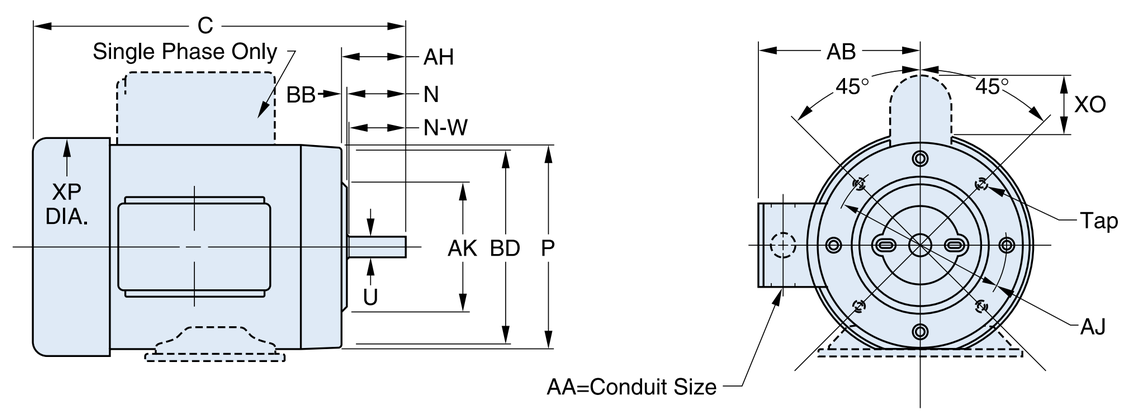
MOTOR DATA

LEESON®

RIGID MOUNT



C-FACE



NEMA T FRAME DIMENSIONS

NEMA Series	D	E	F	H	N	O	P	U	N-W	AA Size	AB	AH	AJ	AK	BA*	BB	BD	XO/T^	XP	Tap	Key Size Sq.
42	2 5/8	1 3/4	27/32	9/32 Slot	1 1/4	5 1/16	4 7/8	3/8	1 1/8	3/8	4 1/2	1 5/16	3 3/4	3	2 1/16	1/8	4 7/8	1 5/8	5 1/8	1/4-20(4)	3/64 Flat
48	3	2 1/8	1 3/8	11/32 Slot	1 5/8	5 7/8	5 5/8	1/2	1 1/2	1/2	4 7/8	1 11/16	3 3/4	3	2 1/2	1/8	5	2 1/4	5 7/8	1/4-20(4)	3/64 Flat
56 56H	3 1/2	2 7/16	1 1/2 2 1/2	11/32 Slot	2	6 7/8	6 5/8	5/8	1 7/8	1/2	5 3/8	2 1/16	5 7/8	4 1/2	2 3/4	1/8	6 1/2	2 1/4	7 1/4	3/8-16(4)	3/16
143T 145T	3 1/2	2 3/4	2 2 1/2	11/32	2 3/8	6 7/8	6 5/8	7/8	2 1/4	3/4	5 3/8	2 1/8	5 7/8	4 1/2	2 1/4*	1/8	6 1/2	2 1/4	7 1/4	3/8-16(4)	3/16
182T 184T	4 1/2	3 3/4	2 1/4 2 3/4	13/32	–	8 3/4	8 1/2	1 1/8	2 3/4	3/4	6 3/8	2 5/8	7 1/4	8 1/2	2 3/4*	1/4	8 7/8	2 1/2	9 1/8	1/2-13(4)	1/4
213T 215T	5 1/4	4 1/4	2 3/4 3 1/2	13/32	–	10 5/8	9 3/4	1 3/8	3 3/8	3/4	8 3/8	3 1/8	7 1/4	8 1/2	3 1/2*	1/4	9	1 3/4	10 3/4	1/2-13(4)	5/16
254T 256T	6 1/4	5	4 1/8 5	17/32	–	13	13	1 5/8	4	1 1/4	10 1/2	3 3/4	7 1/4	8 1/2	4 1/4*	1/4	10	2 1/4	13	1/2-13(4)	3/8
284T 284TS	7	5 1/2	4 3/4	17/32	–	14 1/2	13 3/8	1 7/8 1 5/8	4 5/8 3 1/4	1 1/2	11 7/8	4 3/8 3	9	10 1/2	4 3/4	1/4	11 1/4	2 1/4	14 1/2	1/2-13(4)	1/2 3/8
286T 286TS			5 1/2					1 7/8 1 5/8	4 5/8 3 1/4			4 3/8 3									1/2 3/8
324T 324TS	8	6 1/4	5 1/4	21/32	–	16 1/8	15 7/8	2 1/8 1 7/8	5 1/4 3 3/4	2	13	5 3 1/2	11	12 1/2	5 1/4	1/4	14	2 5/8	16 1/8	5/8-11(4)	5/8 1/2
326T 326TS			6					2 1/8 1 7/8	5 1/4 3 3/4			5 3 1/2									5/8 1/2
364T 364TS	9	7	5 5/8	21/32	–	18 3/8	17 7/8	2 3/8 1 7/8	5 7/8 3 3/4	3	14	5 5/8 3 1/2	11	12 1/2	5 7/8	1/4	14	2 5/8	18 3/8	5/8-11(8)	5/8 1/2
365T 365TS			6 1/8					2 3/8 1 7/8	5 7/8 3 3/4			5 5/8 3 1/2									5/8 1/2
404T 404TS	10	8	6 1/8	13/16	–	20	19 5/8	2 7/8 2 1/8	7 1/4 4 1/4	3	16	7 4	11	12 1/2	6 5/8	1/4	14	2 5/8	20	5/8-11(8)	3/4 1/2
405T 405TS			6 7/8					2 7/8 2 1/8	7 1/4 4 1/4			7 4									3/4 1/2
444T 444TS	11	9	7 1/4 7 1/4	13/16	–	21 3/4 21 3/4	21 3/8 21 3/8	3 3/8 2 3/8	8 1/2 4 3/4	3	20	8 1/4 4 1/2	14	16	7 1/2	1/4	18	3 3	21 1/2 21 1/2	5/8-11(8)	7/8 5/8
445T 445TS			8 1/4 8 1/4			21 3/4 21 3/4	21 3/8 21 3/8	3 3/8 2 3/8	8 1/2 4 3/4			8 1/4 4 1/2						3 3	21 1/2 21 1/2		7/8 5/8
447T 447TS			10 10			23 23	22 3/4 22 3/4	3 3/8 2 3/8	8 1/2 4 3/4			8 1/4 4 1/2						3 1/4 3 1/4	24 24		7/8 5/8
449T 449TS			12 1/2 12 1/2			23 23	23 3/8 23 3/8	3 3/8 2 3/8	8 1/2 4 3/4			8 1/4 4 1/2						3 1/4 3 1/4	24 24		7/8 5/8

The dimensions listed here are intended for reference purposes only. Dimensions shown in the shaded areas will not change from one brand to another for motors built to NEMA rigid base or "C" face mounted dimensional standards. Other dimensions shown are determined by the manufacturer rather than NEMA standards. Those listed are for LEESON® motors and may differ from other brands. Beware of NEMA frame suffix letters other than those listed above as they denote different mounting or shaft dimensions. For example, suffix letterY denotes special mounting provisions and Z denotes special shaft dimensions (as in 184TYZ for example). Motors having no suffix letters (other than NEMA frames 42, 48 and 56) are built to prior NEMA standards.

Prefix letters are often used by manufacturers (as in G184T) to indicate the overall length of a motor but do not denote differences in the NEMA standardized mounting dimensions. The overall length ("C" dimension) will change with the enclosure, horsepower and speed for the same brand and will vary from one brand to another for motors of the same HP, speed or enclosure. For detailed dimensions of all LEESON motors, go to "products" then "product catalog" on www.leeson.com

* NEMA C face motors also having a rigid base have different BA dimensions in the following instances:
143TC & 145TC – 2 3/4" instead of 2 1/4"
182TC & 184TC – 3 1/2" instead of 2 3/4"
213TC & 215TC – 4 1/4" instead of 3 1/2"
254TC & 256TC – 4 3/4" instead of 4 1/4"

^ XO denotes clearance for the capacitors of single phase motors through the 215T frame. On three phase 254T frame and large motors, T denotes clearance for the lifting eyebolt.

PRIOR NEMA FRAME MTG. DIMENSIONS

	D	E	F	H	U	BA	N-W	Key
66	4 1/8	2 15/16	2 1/2	13/32	3/4	3 1/8	2 1/4	3/16
143 145	3 1/2	2 3/4	2 2 1/2	11/32	3/4	2 1/4	2	3/16
182 184	4 1/2	3 3/4	2 1/4 2 3/4	13/32	7/8	2 3/4	2 1/4	3/16
203 204	5	4	2 3/4 3 1/4	13/32	3/4	3 1/8	2 1/4	3/16
213 215	5 1/4	4 1/4	2 3/4 3 1/2	13/32	1 1/8	3 1/2	3	1/4
224 225	5 1/2	4 1/2	3 3/8 3 3/4	13/32	1	3 1/2	3	1/4
254 254U 256U	6 1/4	5	4 1/8	17/32	1 1/8	4 1/4	3 3/8	1/4
			5		1 3/8		3 3/4	5/16
284 284U 286U	7	5 1/2	4 3/4	17/32	1 1/4	4 3/4	3 3/4	1/4
			5 1/2		1 5/8		4 7/8	3/8
324 324U 326 326U	8	6 1/4	5 1/4	21/32	1 5/8 1 7/8 1 5/8 1 7/8	5 1/4	4 7/8 5 5/8 4 7/8 5 5/8	3/8 1/2 3/8 1/2
			6					
364 364U 365 365U	9	7	5 5/8	21/32	1 7/8 2 1/8 1 7/8 2 1/8	5 7/8	5 5/8 6 3/8 5 5/8 6 3/8	1/2
			6 1/8					
404 404U 405 405U	10	8	6 1/8	13/16	2 1/8 2 3/8 2 1/8 2 3/8	6 5/8	6 3/8 7 1/8 6 3/8 7 1/8	1/2 5/8 1/2 5/8
			6 7/8					
444 444U 445 445U	11	9	7 1/4	13/16	2 3/8 2 7/8 2 3/8 2 7/8	7 1/2	7 1/8 8 5/8 7 1/8 8 5/8	5/8 3/4 5/8 3/4
			8 1/4					
504U 505	12 1/2	10	8 9	15/16	2 7/8	8 1/2	8 5/8	3/4

IEC/NEMA COMPARISON

IEC NEMA	DIMENSIONS IN MILLIMETERS D	E	F	H	U	BA	N-W	KW/HP~ FRAME ASSIGNMENTS 3 Phase –TEFC 2 Pole	4 Pole	6 Pole
56 N/A	56 –	45 –	35.5 –	5.8 –	9 –	36 –	20 –	– –	– –	– –
63 42	63 66.7	50 44.5	40 21.4	7 7.1	11 9.5	40 52.4	23 –	.25 KW 1/3 HP	.18 KW 1/4 HP	– –
71 48	71 76.2	56 54	45 34.9	7 8.7	14 12.7	45 63.5	30 38.1	.55 3/4	.37 1/2	– –
80 56	80 88.9	62.5 61.9	50 38.1	10 8.7	19 15.9	50 69.9	40 47.6	1.1 1 1/2	.75 1	.55 KW 3/4 HP
90S 143T	90 88.9	70 69.8	50 50.8	10 8.7	24 22.2	56 57.2	50 57.2	1.5 2	1.1 1 1/2	.75 1
90L 145T	90 88.9	70 69.8	62.5 63.5	10 8.7	24 22.2	56 57.2	50 57.2	2.2 3	1.5 2	1.1 1 1/2
100L N/A	100 –	80 –	70 –	12 –	28 –	63 –	60 –	3 4	2.2 3	1.5 2
112S 182T	112 114.3	95 95.2	57 57.2	12 10.7	28 28	70 70	60 69.9	3.7 5	2.2 3	1.5 2
112M 184T	112 114.3	95 95.2	70 68.2	12 10.7	28 28	70 70	60 69.9	3.7 5	4 5.4/5	2.2 –
132S 213T	132 133.4	108 108	70 69.8	12 10.7	38 34.9	89 89	80 85.7	7.5 10	5.5 7 1/2	3 –
132M 215T	132 133.4	108 108	89 88.8	12 10.7	38 34.9	89 89	80 85.7	– –	7.5 10	5.5 7 1/2
160M+ 254T	160 158.8	127 127	105 104.8	15 13.5	42 41.3	108 108	110 101.6	15 20	11 15	7.5 10
160L+ 256T	160 158.8	127 127	127 127	15 13.5	42 41.3	108 108	110 101.6	18.5 25	15 20	11 15
180M+ 284T	180 177.8	139.5 139.8	120.5 120.2	15 13.5	48 47.6	121 121	110 117.5	22 –	18.5 25	– –
180L+ 286T	180 177.8	139.5 139.8	139.5 139.8	15 13.5	48 47.6	121 121	110 117.5	22 30	22 30	15 20
200M+ 324T	180 203.3	159 158.8	133.5 133.4	19 16.7	55 54	133 133	110 133.4	30 40	30 40	– –
200L+ 326T	200 203.2	159 158.8	152.5 152.4	19 16.7	55 54	133 133	110 133.4	37 50	37 50	22 30
225S+ 364T	225 228.6	178 117.8	143 142.8	19 16.7	60 60.3	149 149	140 149.2	– –	37 50/75	30 40
225M+ 365T	225 228.6	178 177.8	155.5 155.6	19 16.7	60 60.3	149 149	140 149.2	45 60/75	45 60/75	37 50
250M+ 405T	250 254	203 203.2	174.5 174.6	24 20.6	65 73	168 168	140 184.2	55 75/100	55 75/100	– –
280S+ 444T	280 279.4	228.5 228.6	184 184.2	24 20.6	75 85.7	190 190	140 215.9	– –	– –	45 60/100
280M+ 445T	280 279.4	228.5 228.6	209.5 209.6	24 20.6	75 85.7	190 190	140 215.9	– –	– –	55 75/125

\+ Shaft dimensions of these IEC frames may vary between manufacturers.

~ Horsepower listed is closest comparable rating with similar mounting dimensions. In some instances, this results in a greater HP rating than required. For example, 37KW 4 pole converts to 50HP but nearest HP rating int he NEMA frame having comparable dimensions is 75HP. In these instances, the HP rating printed in black is the direct conversion, and HP printed in blue is the HP of the dimensionally desirable frame. OBSERVE CAUTION if the drive train or driven load is likely to be damaged by the greater HP.

Equivalent HP can be calculated by multiplying the KW rating by 1.341. Multiply HP by .7457 to convert HP to KW.

To convert from millimeters to inches, multiply by .03937
To convert from inches to millimeters, multiply by 25.4

NEMA FRAME ASSIGNMENTS OPEN & TEFC (TEFC FRAMES IN BLUE WHERE DIFFERENT THAN OPEN)

NEMA Frame Program HP	3600 RPM T Frames 1964	U Frames 1952	Original NEMA Frames	1800 RPM T Frames 1964	U Frames 1952	Original NEMA Frames	1200 RPM T Frames 1964	U Frames 1952	Original NEMA Frames	900 RPM T Frames 1964	U Frames 1952	Original NEMA Frames
1	–	–	–	143T	182	203	145T	184	204	182T	213	225
1 1/2	143T	182	203	145T	184	204	182T	184	224	184T	213	254
2	145T	184	204	145T	184	224	184T	213	225	213T	215	254
3	145T/182T	184	224	182T	213	225	213T	215	254	215T	254U	284
5	182T/184T	213	225	184T	215	254	215T	254U	284	254T	256U	324
7 1/2	184T/213T	215	254	213T	254U	284	254T	256U	324	256T	284U	326
10	213T/215T	254U	284	215T	256U	324	256T	284	326	284T	286U	364
15	215T/254T	256U	324	254T	284U	326	284T	324U	364	286T	326U	365
20	254T/256T	284U/286U	326	256T	286U	364	286T	326U	365	324T	364U	404
25	256T/284TS	286U/324U	364S/365S	284T	324U	364/365	324T	364U	404	326T	365U	405
30	284TS/286TS	324S/326S	364S/404S	286T	326U	365/404	326T	365U	405	364T	404U	444
40	286TS/324TS	326S/364US	365S/405S	324T	364U	404/405	364T	404U	444	365T	405U	445
50	324TS/326TS	364US	404S/444S	326T	365US	405S/444S	365T	405U	445	404T	444U	504U
60	326TS/364TS	365US/405US	405S/445S	364TS	404US/405US	444S/445S	404T	444U	504U	405T	445U	505
75	364TS/365TS	404US/444US	444S/504S	365TS	405US/444US	445S/504S	405T	445U	505	444T	–	–
100	365TS/405TS	405US/445US	445S/505S	404TS/405TS	444US/445US	504S/505S	444T	–	–	445T	–	–
125	404TS/444TS	444US	504S	405TS/444TS	445US	505S	445T	–	–	–	–	–
150	405TS/445TS	445US	505S	444TS/445TS	–	–	–	–	–	–	–	–
200	444TS	–	–	445TS	–	–	–	–	–	–	–	–
250	445TS	–	–	–	–	–	–	–	–	–	–	–

FRACTION/DECIMAL/MILLIMETER CONVERSIONS

Inch - Fraction	Inch - Decimal	Millimeter	Inch - Fraction	Inch - Decimal	Millimeter	Inch - Fraction	Inch - Decimal	Millimeter	Fraction	Decimal	Millimeter
1/64	0.015625	0.397	17/64	0.265625	6.747	33/64	0.515625	13.097	49/64	0.765625	19.447
1/32	0.03125	0.794	9/32	0.28125	7.144	17/32	0.53125	13.494	25/32	0.78125	19.844
3/64	.046875	1.191	19/64	0.296875	7.541	35/64	0.546875	13.891	51/64	0.796875	20.241
1/16	0.0625	1.588	5/16	0.3125	7.938	9/16	0.5625	14.288	13/16	0.8125	20.638
5/64	0.078125	1.984	21/64	0.328125	8.334	37/64	0.578125	14.684	53/64	0.828125	21.034
3/32	0.09375	2.381	11/32	0.34375	8.731	19/32	0.59375	15.081	27/32	0.84375	21.431
7/64	0.109375	2.778	23/64	0.359375	9.128	39/64	0.609375	15.478	55/64	0.859375	21.828
1/8	0.125	3.175	3/8	0.375	9.525	5/8	0.625	15.875	7/8	0.875	22.225
9/64	0.140625	3.572	25/64	0.390625	9.921	41/64	0.640625	16.272	57/64	0.890625	22.622
5/32	0.15625	3.969	13/32	0.40625	10.319	21/32	0.65625	16.669	29/32	0.90625	23.019
11/64	.171875	4.366	27/64	0.421875	10.716	43/64	0.671875	17.066	59/64	0.921875	23.416
3/16	0.1875	4.762	7/16	0.4375	11.112	11/16	0.6875	17.462	15/16	0.9375	23.812
13/64	0.203125	5.129	29/64	0.453125	11.509	45/64	0.703125	17.859	61/64	0.953125	24.209
7/32	0.21875	5.556	15/32	0.46875	11.906	23/32	0.71875	18.256	31/32	0.96875	24.606
15/64	0.234375	5.953	31/64	0.484375	12.303	47/64	0.734375	18.653	63/64	0.984375	25.003
1/4	0.25	6.350	1/2	0.50	12.700	3/4	0.75	19.050	1	1.00	25.400

MM	Inch	MM	Inch
1	0.039	14	0.5519
2	0.0790	15	0.5906
3	0.1181	16	0.6300
4	0.1575	17	0.6693
5	0.1969	18	0.7087
6	0.2362	19	0.7480
7	0.2756	20	0.7874
8	0.3150	21	0.8268
9	0.3543	22	0.8661
10	0.3937	23	0.9055
11	0.4331	24	0.9449
12	.4724	25	0.9843
13	.5119		

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