

P20 Series Connected Coil Performance Specification (Version 3.01)								
General and 6 Lead Motor Specifications	UNITS	Dash #	1	2	3	4	5	6
Force Constant	lb _f /A		4.1	8.2	12.3	16.4	20.6	24.7
	N/A		18.3	36.6	54.9	73.1	91.4	109.7
Max Operating Temperature	℃		130	130	130	130	130	130
Maximum Temp. Rise	℃		105	105	105	105	105	105
Coil Resistance (6 lead @ 25℃)	Ω		5.82	11.64	17.46	23.28	29.10	34.92
Coil Resistance (6 lead @ Max. ℃)	Ω		8.23	16.45	24.68	32.91	41.14	49.36
Inductance @ 1kHz	mH		1.8	3.6	5.4	7.2	9.0	10.8
Thermal Resistance (Bracket Top Mount)	℃/W		1.28	0.64	0.43	0.32	0.26	0.21
Continuous Power Top Mount (Max. ℃)	W		82	164	246	327	409	491
Thermal Resistance, side mount (SP23, 1" hole spacing)	℃/ W		1.80	0.90	0.60	0.45	0.36	0.30
Continuous Power using Side Mount (Max. ℃)	W		58	117	175	233	292	350
top mounted to a 12" wide, 1/2" thick aluminum plate (plate extends 2"	W		43.5	70.6	95.0	118.6	141.8	164.7
Motor Constant	lb _f /sqrt(W)		1.8	2.5	3.0	3.5	3.9	4.3
	N/sqrt(W)		7.81	11.04	13.52	15.62	17.46	19.13
Peak Power (Max. ℃, 10% Duty)	W		819	1637	2456	3274	4093	4911
Back EMF Constant	V/inch/s		0.46	0.93	1.39	1.86	2.32	2.78
	V/m/s		18.3	36.6	54.9	73.1	91.4	109.7
Electrical Time Constant (@ 25℃)	ms		0.31	0.31	0.31	0.31	0.31	0.31
(@ 130℃)	ms		0.22	0.22	0.22	0.22	0.22	0.22
Maximum Line to Line Voltage	Vrms		500	500	500	500	500	500
Coil Weight (HED adds 15g,[.033lb])	Pounds		0.5	1.1	1.6	2.1	2.7	3.2
	Kilograms		0.24	0.48	0.72	0.96	1.21	1.45
Coil length (inside magnet track without HED)	inch		2.41	4.81	7.21	9.61	12.01	14.41
HED increases coil length by 1.49 inch (37.8mm)	mm		61.2	122.2	183.1	244.1	305.1	366.0
Coil bracket length (without HED option)	inch		3.21	5.61	8.01	10.41	12.81	15.21
HED increases bracket length by 1.49inch, (37.8mm)	mm		81.5	142.5	203.5	264.4	325.4	386.3
Delta Connected Specifications	UNITS	Dash #	1	2	3	4	5	6
Force Constant	lb _f /A		4.1	8.2	12.3	16.4	20.6	24.7
	N/A		18.3	36.6	54.9	73.1	91.4	109.7
Phase Resistance (Δ @ 25℃)	Ω		3.9	7.8	11.6	15.5	19.4	23.3
Phase Resistance (Δ @ Max. ℃)	Ω		5.5	11.0	16.5	21.9	27.4	32.9
Inductance @ 1kHz	mH		1.2	2.4	3.6	4.8	6.0	7.2
Continuous Force	lb _f		15.9	31.8	47.6	63.5	79.4	95.3
	N		70.6	141.3	211.9	282.6	353.2	423.9
Continuous Current	A		3.9	3.9	3.9	3.9	3.9	3.9
Peak Force*	lb _f		50	100	151	201	251	301
	N		223	447	670	894	1117	1340
Peak Current*	A		12.2	12.2	12.2	12.2	12.2	12.2
Back EMF Constant	V/inch/s		0.5	0.9	1.4	1.9	2.3	2.8
	V/m/s		18.3	36.6	54.9	73.1	91.4	109.7
WYE connected Specifications	UNITS	Dash #	1	2	3	4	5	6
Force Constant	lb _f /A		7.1	14.2	21.4	28.5	35.6	42.7
	N/A		31.7	63.3	95.0	126.7	158.4	190.0
Phase Resistance (Ψ @ 25℃)	Ω		11.6	23.3	34.9	46.6	58.2	69.8
Phase Resistance (Ψ @ Max. ℃)	Ω		16.5	32.9	49.4	65.8	82.3	98.7
Inductance @ 1kHz	mH		3.6	7.2	10.8	14.4	18.1	21.7
Continuous Force	lb _f		15.9	31.8	47.6	63.5	79.4	95.3
	N		70.6	141.3	211.9	282.6	353.2	423.9
Continuous Current	A		2.23	2.23	2.23	2.23	2.23	2.23
Peak Force*	lb _f		50	100	151	201	251	301
	N		223	447	670	894	1117	1340
Peak Current*	A		7.05	7.05	7.05	7.05	7.05	7.05
Back EMF Constant	V/inch/s		0.8	1.6	2.4	3.2	4.0	4.8
	V/m/s		31.7	63.3	95.0	126.7	158.4	190.0
* Notes:								
Specifications based on heat sink maintained within 10℃ of ambient temperature at motor bracket interface.								
Dash 6 and larger coils may be constructed in multiple segments. Contact factory for availability.								
On time of "Peak Power" (duration) less than 10 seconds.								
Back EMF plus IR drop must not exceed "Maximum Terminal Voltage" listed.								
Electrical cycle length is 2.4 inch (61mm).								
Resistance Specifications do not include the cable resistance.								
Custom cable required for peak current exceeding 17 ampere.								
Cable adds 0.22Ω/m to 6-lead resistance, 0.146Ω/m to Delta resistance and 0.44Ω/m to WYE resistance.								
Magnet Track weight is 13kg/m (9.0 pounds/foot).								

P20 Parallel Connected Coil Performance Specification (Version 3.01)								
General and 6 Lead Motor Specifications	UNITS	Dash #	1	2	3	4	5	6
Force Constant	lb _f /A		2.1	4.1	6.2	8.2	10.3	12.3
	N/A		9.1	18.3	27.4	36.6	45.7	54.9
Max Operating Temperature	°C		130	130	130	130	130	130
Maximum Temp. Rise	°C		105	105	105	105	105	105
Coil Resistance (6 lead @ 25°C)	Ω		1.45	2.91	4.36	5.82	7.27	8.73
Coil Resistance (6 lead @ Max. °C)	Ω		2.06	4.11	6.17	8.23	10.28	12.34
Inductance @ 1kHz	mH		0.5	0.9	1.4	1.8	2.3	2.7
Thermal Resistance (Bracket Top Mount)	°C/W		1.28	0.64	0.43	0.32	0.26	0.21
Continuous Power Top Mount (Max. °C)	W		82	164	246	327	409	491
Thermal Resistance, side mount (SP23, 1" hole spacing)	°C/W		1.80	0.90	0.60	0.45	0.36	0.30
Continuous Power using Side Mount (Max. °C)	W		58	117	175	233	292	350
Continuous power rating top mounted to a 12" wide, 1/2" thick aluminum plate (plate extends 2" beyond each end of the coil bracket, and is in 25°C free air).	W		43.5	70.6	95.0	118.6	141.8	164.7
Motor Constant	lb _f /sqrt(W)		1.8	2.5	3.0	3.5	3.9	4.3
	N/sqrt(W)		7.81	11.04	13.52	15.62	17.46	19.13
Peak Power (Max. °C, 10% Duty)	W		819	1637	2456	3274	4093	4911
Back EMF Constant	V/inch/s		0.23	0.46	0.70	0.93	1.16	1.39
	V/m/s		9.1	18.3	27.4	36.6	45.7	54.9
Electrical Time Constant (@ 25°C)	ms		0.31	0.31	0.31	0.31	0.31	0.31
(@ 130°C)	ms		0.22	0.22	0.22	0.22	0.22	0.22
Maximum Line to Line Voltage	Vrms		500	500	500	500	500	500
Coil Weight (HED adds 15g,[.033lb])	Pounds		0.5	1.1	1.6	2.1	2.7	3.2
	Kilograms		0.24	0.48	0.72	0.96	1.21	1.45
Coil length (inside magnet track without HED)	inch		2.41	4.81	7.21	9.61	12.01	14.41
HED increases coil length by 1.49 inch (37.8mm)	mm		61.2	122.2	183.1	244.1	305.1	366.0
Coil bracket length (without HED option)	inch		3.21	5.61	8.01	10.41	12.81	15.21
HED increases bracket length by 1.49inch, (37.8mm)	mm		81.5	142.5	203.5	264.4	325.4	386.3
Delta Connected Specifications	UNITS	Dash #	1	2	3	4	5	6
Force Constant	lb _f /A		2.1	4.1	6.2	8.2	10.3	12.3
	N/A		9.1	18.3	27.4	36.6	45.7	54.9
Phase Resistance (Δ @ 25°C)	Ω		1.0	1.9	2.9	3.9	4.8	5.8
Phase Resistance (Δ @ Max. °C)	Ω		1.4	2.7	4.1	5.5	6.9	8.2
Inductance @ 1kHz	mH		0.3	0.6	0.9	1.2	1.5	1.8
Continuous Force	lb _f		15.9	31.8	47.6	63.5	79.4	95.3
	N		70.6	141.3	211.9	282.6	353.2	423.9
Continuous Current	A		7.7	7.7	7.7	7.7	7.7	7.7
Peak Force*	lb _f		50	100	151	201	251	301
	N		223	447	670	894	1117	1340
Peak Current*	A		24.4	24.4	24.4	24.4	24.4	24.4
Back EMF Constant	V/inch/s		0.2	0.5	0.7	0.9	1.2	1.4
	V/m/s		9.1	18.3	27.4	36.6	45.7	54.9
WYE connected Specifications	UNITS	Dash #	1	2	3	4	5	6
Force Constant	lb _f /A		3.6	7.1	10.7	14.2	17.8	21.4
	N/A		15.8	31.7	47.5	63.3	79.2	95.0
Phase Resistance (Ψ @ 25°C)	Ω		2.9	5.8	8.7	11.6	14.5	17.5
Phase Resistance (Ψ @ Max. °C)	Ω		4.1	8.2	12.3	16.5	20.6	24.7
Inductance @ 1kHz	mH		0.9	1.8	2.7	3.6	4.5	5.4
Continuous Force	lb _f		15.9	31.8	47.6	63.5	79.4	95.3
	N		70.6	141.3	211.9	282.6	353.2	423.9
Continuous Current	A		4.46	4.46	4.46	4.46	4.46	4.46
Peak Force*	lb _f		50	100	151	201	251	301
	N		223	447	670	894	1117	1340
Peak Current*	A		14.11	14.11	14.11	14.11	14.11	14.11
Back EMF Constant	V/inch/s		0.4	0.8	1.2	1.6	2.0	2.4
	V/m/s		15.8	31.7	47.5	63.3	79.2	95.0
* Notes:								
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Dash 6 and larger coils may be constructed in multiple segments. Contact factory for availability.								
On time of "Peak Power" (duration) less than 10 seconds.								
Back EMF plus IR drop must not exceed "Maximum Terminal Voltage" listed.								
Electrical cycle length is 2.4 inch (61mm).								
Resistance Specifications do not include the cable resistance.								
Custom cable required for peak current exceeding 17 ampere.								
Cable adds 0.22Ω/m to 6-lead resistance, 0.146Ω/m to Delta resistance and 0.44Ω/m to WYE resistance.								
Magnet Track weight is 13kg/m (9.0 pounds/foot).								