

P12 Series Connected Coil Performance Specification

General and 6 Lead Motor Specifications		UNITS	Dash #	0.5	1	2	3	4
Force Constant	lb _f /A		0.9	1.8	3.7	5.5	7.3	
	N/A		4.1	8.1	16.3	24.4	32.6	
Max Operating Temperature	°C		130	130	130	130	130	
Maximum Temp. Rise	°C		105	105	105	105	105	
Coil Resistance (6 lead @ 25°C)	Ω		4.3	8.7	17.4	26.1	34.7	
Coil Resistance (6 lead @ Max. °C)	Ω		6.1	12.3	24.6	36.8	49.1	
Inductance @ 1kHz	mH		0.8	1.6	3.2	4.8	6.4	
Thermal Resistance (Bracket Top Mount)	°C/W		3.00	1.50	0.75	0.50	0.38	
Continuous Power top mount (Max. °C)*	W		35	70	140	210	280	
Thermal Resistance, side mount (SP23, 1" hole spacing)	°C/W		3.38	1.69	0.84	0.56	0.42	
Continuous Power using Side Mount (Max. °C)	W		31	62	124	187	249	
Continuous Power, top mount to plate**(Max. °C)	W		24.6	40.9	67.2	90.9	113.6	
Motor Constant	lb _f /sqrt(W)		0.5	0.6	0.9	1.1	1.3	
	N/sqrt(W)		2.01	2.85	4.03	4.93	5.69	
Peak Power (Max. °C, 10% Duty)	W		350	700	1400	2100	2800	
Back EMF Constant	V/inch/s		0.10	0.21	0.41	0.62	0.83	
	V/m/s		4.1	8.1	16.3	24.4	32.6	
Electrical Time Constant (@ 25°C)	ms		0.19	0.19	0.19	0.19	0.19	
(@ 130°C)	ms		0.13	0.13	0.13	0.13	0.13	
Maximum Line to Line Voltage	V _{rms}		500	500	500	500	500	
Coil Weight (HED adds 15g,[.033lb])	Pounds		0.08	0.17	0.34	0.51	0.68	
	Kilograms		0.04	0.08	0.15	0.23	0.31	
Coil length (inside magnet track without HED)	inch		1.21	2.41	4.81	7.21	9.61	
HED increases coil length by 1.48 inch (37.6mm)	mm		30.7	61.2	122.2	183.1	244.1	
Coil bracket length (without HED option)	inch		2.41	3.61	6.01	8.41	10.81	
HED increases bracket length by .28inch, (7.1mm)	mm		61.2	91.7	152.7	213.6	274.6	
Standard Cable Peak Current Limit	A		17.0	17.0	17.0	17.0	17.0	
Delta Connected Specifications		UNITS	Dash #	0.5	1	2	3	4
Force Constant	lb _f /A		0.9	1.8	3.7	5.5	7.3	
	N/A		4.1	8.1	16.3	24.4	32.6	
Phase Resistance (Δ @ 25°C)	Ω		2.9	5.8	11.6	17.4	23.2	
Phase Resistance (Δ @ Max. °C)	Ω		4.1	8.2	16.4	24.6	32.8	
Inductance @ 1kHz	mH		0.5	1.1	2.1	3.2	4.3	
Continuous Force	lb _f		2.7	5.4	10.7	16.1	21.4	
	N		11.9	23.8	47.6	71.4	95.3	
Continuous Current	A		2.92	2.92	2.92	2.92	2.92	
Peak Force*	lb _f		8	17	34	51	68	
	N		38	75	151	226	301	
Peak Current*	A		9.2	9.2	9.2	9.2	9.2	
Continuous Force, aluminum plate heat sink** (see below)	lb _f		2.2	4.1	7.4	10.6	13.6	
	N		10.0	18.2	33.0	47.0	60.7	
Back EMF Constant	V/inch/s		0.1	0.2	0.4	0.6	0.8	
	V/m/s		4.1	8.1	16.3	24.4	32.6	
WYE connected Specifications		UNITS	Dash #	0.5	1	2	3	4
Force Constant	lb _f /A		1.6	3.2	6.3	9.5	12.7	
	N/A		7.1	14.1	28.2	42.3	56.4	
Phase Resistance (Ψ @ 25°C)	Ω		8.7	17.4	34.7	52.1	69.5	
Phase Resistance (Ψ @ Max. °C)	Ω		12.3	24.6	49.1	73.7	98.3	
Inductance @ 1kHz	mH		1.6	3.2	6.4	9.6	12.9	
Continuous Force	lb _f		2.7	5.4	10.7	16.1	21.4	
	N		11.9	23.8	47.6	71.4	95.3	
Continuous Current	A		1.69	1.69	1.69	1.69	1.69	
Peak Force*	lb _f		8	17	34	51	68	
	N		38	75	151	226	301	
Peak Current*	A		5.34	5.34	5.34	5.34	5.34	
Continuous Force, aluminum plate heat sink** (see below)	lb _f		2.2	4.1	7.4	10.6	13.6	
	N		10.0	18.2	33.0	47.0	60.7	
Back EMF Constant	V/inch/s		0.2	0.4	0.7	1.1	1.4	
	V/m/s		7.1	14.1	28.2	42.3	56.4	

*** Notes:**

Specifications based on heat sink maintained within 10°C of ambient temperature at motor bracket interface.
 Dash 5 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 1.2 inch (30.5mm).
 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.
 ** Heat Sink is a 12" wide, 1/2" thick aluminum plate, extending 2" beyond each end of the coil bracket, in 258C free air.
 Magnet Track weight is 2.95kg/m (2 pounds/foot).