

P16 Series Connected Coil Performance Specification (Version 3.01)

General and 6 Lead Motor Specifications	UNITS	Dash #	0.5	1	2	3	4
Force Constant	lb _f /A		1.6	3.2	6.4	9.7	12.9
	N/A		7.2	14.3	28.7	43.0	57.4
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		4.4	8.8	17.6	26.4	35.2
Coil Resistance (6 lead @ Max. °C)	Ω		6.2	12.4	24.9	37.3	49.8
Inductance @ 1kHz	mH		0.9	1.8	3.5	5.3	7.0
Thermal Resistance (Bracket Top Mount)	°C/W		2.40	1.20	0.60	0.40	0.30
Continuous Power Top Mount (Max. °C)	W		44	88	175	263	350
Thermal Resistance, side mount (SP23, 1" hole spacing)	°C/W		2.70	1.35	0.68	0.45	0.34
Continuous Power using Side Mount (Max. °C)	W		39	78	156	233	311
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		28.6	46.3	74.3	99.5	123.6
Motor Constant	lb _f /sqrt(W)		0.8	1.1	1.6	1.9	2.2
	N/sqrt(W)		3.52	4.98	7.04	8.62	9.96
Peak Power (Max. °C, 10% Duty)	W		438	875	1750	2625	3500
Back EMF Constant	V/inch/s		0.18	0.36	0.73	1.09	1.46
	V/m/s		7.2	14.3	28.7	43.0	57.4
Electrical Time Constant (@ 25°C)	ms		0.20	0.20	0.20	0.20	0.20
	ms		0.14	0.14	0.14	0.14	0.14
Maximum Line to Line Voltage	Vrms		500	500	500	500	500
Coil Weight	Pounds		0.10	0.20	0.40	0.60	0.80
	Kilograms		0.05	0.09	0.18	0.27	0.36
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
Delta Connected Specifications	UNITS	Dash #	0.5	1	2	3	4
Force Constant	lb _f /A		1.6	3.2	6.4	9.7	12.9
	N/A		7.2	14.3	28.7	43.0	57.4
Phase Resistance (Δ @ 25°C)	Ω		2.93	5.87	11.74	17.60	23.47
Phase Resistance (Δ @ Max. °C)	Ω		4.15	8.30	16.59	24.89	33.18
Inductance @ 1kHz	mH		0.6	1.2	2.3	3.5	4.7
Continuous Force	lb _f		5.2	10.5	20.9	31.4	41.9
	N		23.3	46.6	93.1	139.7	186.3
Continuous Current	A		3.25	3.25	3.25	3.25	3.25
Peak Force*	lb _f		17	33	66	99	132
	N		74	147	295	442	589
Peak Current*	A		10.27	10.27	10.27	10.27	10.27
Back EMF Constant	V/inch/s		0.2	0.4	0.7	1.1	1.5
	V/m/s		7.2	14.3	28.7	43.0	57.4
WYE connected Specifications	UNITS	Dash #	0.5	1	2	3	4
Force Constant	lb _f /A		2.8	5.6	11.2	16.7	22.3
	N/A		12.4	24.8	49.7	74.5	99.3
Phase Resistance (Ψ @ 25°C)	Ω		8.80	17.60	35.21	52.81	70.41
Phase Resistance (Ψ @ Max. °C)	Ω		12.44	24.89	49.77	74.66	99.54
Inductance @ 1kHz	mH		1.8	3.5	7.0	10.6	14.1
Continuous Force	lb _f		5.2	10.5	20.9	31.4	41.9
	N		23.3	46.6	93.1	139.7	186.3
Continuous Current	A		1.88	1.88	1.88	1.88	1.88
Peak Force*	lb _f		17	33	66	99	132
	N		74	147	295	442	589
Peak Current*	A		5.93	5.93	5.93	5.93	5.93
Back EMF Constant	V/inch/s		0.3	0.6	1.3	1.9	2.5
	V/m/s		12.4	24.8	49.7	74.5	99.3

* Notes:

- Specifications based on heat sink maintained within 10°C of ambient temperature at motor bracket inter face.
- Dash 4 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.
- Magnet Track weight is 4kg/m (2.7 pounds/foot).

P16 Parallel Connected Coil Performance Specification (Version 3.01)						
General and 6 Lead Motor Specifications	UNITS	Dash #	1	2	3	4
Force Constant	lb _f /A		1.6	3.2	4.8	6.4
	N/A		7.2	14.3	21.5	28.7
Max Operating Temperature	°C		130	130	130	130
Maximum Temp. Rise	°C		105	105	105	105
Coil Resistance (6 lead @ 25°C)	Ω		2.2	4.4	6.6	8.8
Coil Resistance (6 lead @ Max. °C)	Ω		3.1	6.2	9.3	12.4
Inductance @ 1kHz	mH		0.4	0.9	1.3	1.8
Thermal Resistance (Bracket Top Mount)	°C/W		1.20	0.60	0.40	0.30
Continuous Power Top Mount (Max. °C)	W		88	175	263	350
Thermal Resistance, side mount (SP23, 1" hole spacing)	°C/W		1.35	0.68	0.45	0.34
Continuous Power using Side Mount (Max. °C)	W		1	156	233	311
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		46.3	74.3	99.5	123.6
Motor Constant	lb _f /sqrt(W)		0.5	0.7	0.0	1.0
	N/sqrt(W)		2.25	3.18	0.00	4.50
Peak Power (Max. °C, 10% Duty)	W		875	1750	2625	3500
Back EMF Constant	V/inch/s		0.18	0.36	0.55	0.73
	V/m/s		7.2	14.3	21.5	28.7
Electrical Time Constant (@ 25°C)	ms		0.20	0.20	0.20	0.20
	ms		0.14	0.14	0.14	0.14
Maximum Line to Line Voltage	V _{rms}		500	500	500	500
Coil Weight	Pounds		0.20	0.40	0.60	0.80
	Kilograms		0.09	0.18	0.27	0.36
Coil length (inside magnet track without HED)	inch		2.41	4.81	7.21	9.61
HED increases coil length by 1.48 inch (37.6mm)	mm		61.2	122.2	183.1	244.1
Coil bracket length (without HED option)	inch		3.61	6.01	8.41	10.81
HED increases bracket length by .28inch, (7.1mm)	mm		91.7	152.7	213.6	274.6
Delta Connected Specifications	UNITS	Dash #	1	2	3	4
Force Constant	lb _f /A		1.6	3.2	4.8	6.4
	N/A		7.2	14.3	21.5	28.7
Phase Resistance (Δ @ 25°C)	Ω		1.47	2.93	4.40	5.87
Phase Resistance (Δ @ Max. °C)	Ω		2.07	4.15	6.22	8.30
Inductance @ 1kHz	mH		0.3	0.6	0.9	1.2
Continuous Force	lb _f		4.7	9.5	0.0	18.9
	N		21.1	42.1	0.0	84.2
Continuous Current	A		2.94	2.94	0.00	2.94
Peak Force*	lb _f		33	66	99	132
	N		147	295	442	589
Peak Current*	A		20.5	20.5	20.5	20.5
Back EMF Constant	V/inch/s		0.2	0.4	0.5	0.7
	V/m/s		7.2	14.3	21.5	28.7
WYE connected Specifications	UNITS	Dash #	1	2	3	4
Force Constant	lb _f /A		2.8	5.6	8.4	11.2
	N/A		12.4	24.8	37.3	49.7
Phase Resistance (Ψ @ 25°C)	Ω		4.40	8.80	13.20	17.60
Phase Resistance (Ψ @ Max. °C)	Ω		6.22	12.44	18.66	24.89
Inductance @ 1kHz	mH		0.9	1.8	2.6	3.5
Continuous Force	lb _f		10.5	20.9	31.4	41.9
	N		46.6	93.1	139.7	186.3
Continuous Current	A		3.75	3.75	3.75	3.75
Peak Force*	lb _f		33	66	99	132
	N		147	295	442	589
Peak Current*	A		11.86	11.86	11.86	11.86
Back EMF Constant	V/inch/s		0.3	0.6	0.9	1.3
	V/m/s		12.4	24.8	37.3	49.7
* Notes:						
Specifications based on heat sink maintained within 10°C of ambient temperature at motor bracket inter face.						
Dash 4 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.						
Magnet Track weight is 4kg/m (2.7 pounds/foot).						