

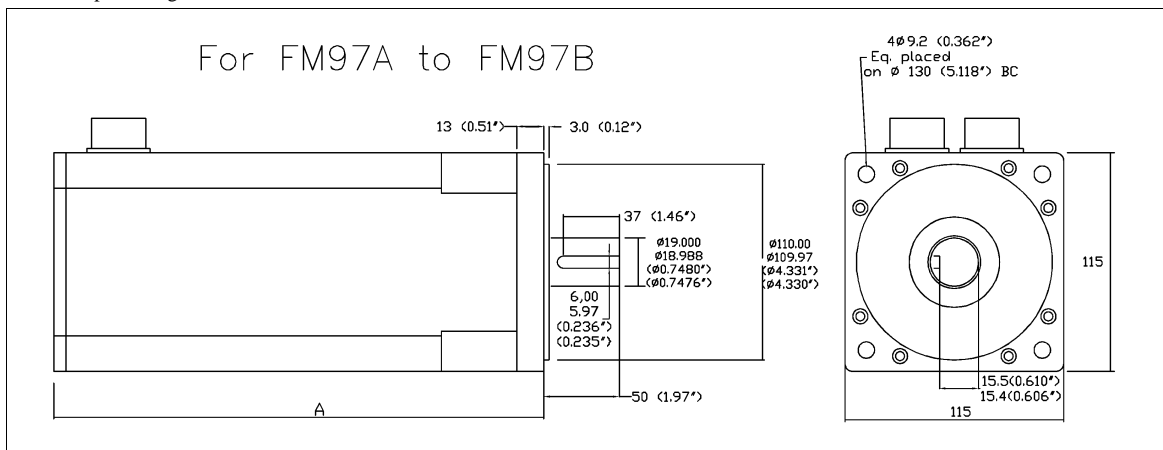
FM Brushless Motor Performance

FM97 Series Motor Data 115 mm Frame 230 V

Motor Parameters	Units	FM97B -54	FM97B -97	FM97D -57	FM97D -107	FM97F -54	FM97F -107
Horsepower	HP	2.4	1.3	3.8	2.3	4.7	3.1
Kilowatts	KW	1.8	1.0	2.8	1.7	3.5	2.3
Max. Speed	RPM	3000	1500	3000	1500	3000	1500
Rated Speed	RPM	3000	1500	3000	1500	3000	1500
Continuous Rated Torque	Nm(In-Lbs)	5.7 (50)	6.3 (56)	8.9 (79)	10.6 (96)	11.1(98)	14.7 (130)
Continuous Stall Torque	Nm(In-Lbs)	6.7 (59)	6.7 (59)	11.8 (104)	11.8(104)	16.0(141)	16.0 (141)
Peak Torque	Nm(In-Lbs)	17.0 (150)	19.0 (168)	26.8 (237)	32.6 (288)	33.3 (294)	44.1 (389)
Continuous Line Current	Amps RMS	7.4	4.6	10.9	7.0	14.4	9.5
Peak Current	Amps RMS	22.2	13.7	32.6	21.1	43.2	28.5
Torque Constant K_T	Nm/Amps (RMS)	0.78	1.40	0.83	1.56	0.78	1.56
Back EMF Constant K_B	Vrms/Krpm	53.6	96.6	57.2	107.3	53.6	107.3
DC Resistance	Ohms	1.7	6.0	0.8	2.5	0.36	1.5
Inductance	Millihenries	9.6	31.1	5.5	19.2	3.2	12.8
Rotor Inertia	Kg-M ² (In-Lbs-Sec ²)	0.00051 (0.0045)	0.00051 (0.0045)	0.00096 (0.0085)	0.00096 (0.0085)	0.0014 (0.012)	0.0014 (0.012)
Static Friction	Nm(In-Lbs)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)
Motor Weight	Kg(Lbs)	8 (18)	8 (18)	11.5(25)	11.5(25)	15 (33)	15 (33)
Maximum Line Voltage	Vrms	250	250	250	250	250	250
Number of Poles		6	6	6	6	6	6

Notes:

1. Continuous rating @25°C. Motor mounted on a 300 mm X 300 mm X 6 mm Aluminum heatsink. Maximum winding temperature 155°C.
2. Test drive input voltage was 220 Vac.



Model	FM97B-54	FM97B-97	FM97D-57	FM97D-107	FM97F-54	FM97F-107
A	240 (9.45")	240 (9.45")	290 (11.42")	290 (11.42")	340(13.39")	340 (13.39")

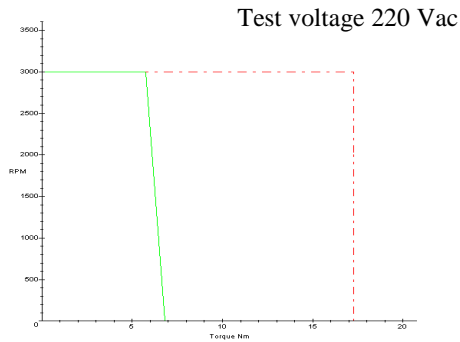
- Notes:**
- IEC mounting dimensions are shown. NEMA mountings are available, please contact Expro Engineering for information.
 - Radial load on output shaft < 450 N (100 Lbs). Axial load should be < 230 N (50 Lbs).
 - All data are subject to change without notice.

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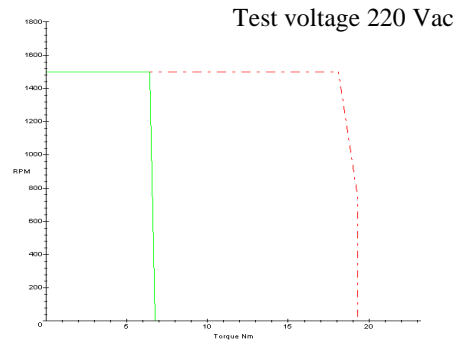
FM Brushless Motor Performance

FM97 Series Motor Data 115 mm Frame 230 Vac

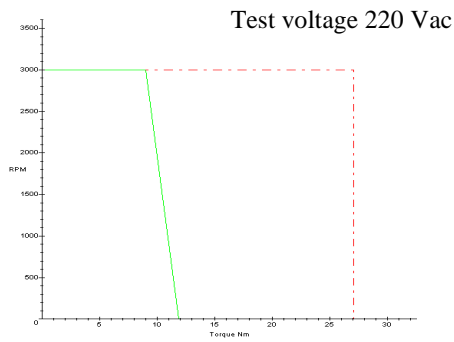
FM97B-54 PERFORMANCE



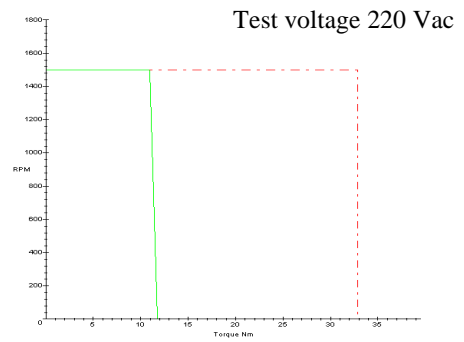
FM97B-97 PERFORMANCE



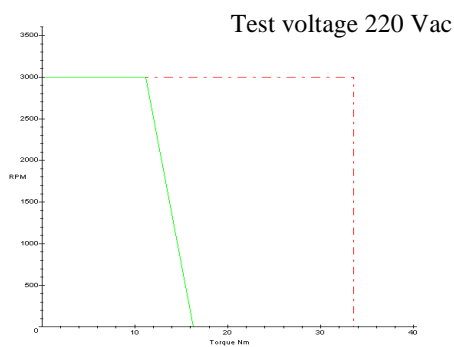
FM97D-57 PERFORMANCE



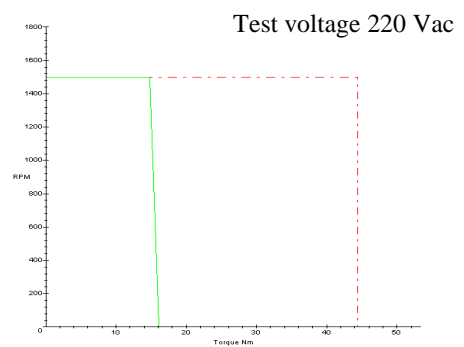
FM97D-107 PERFORMANCE



FM97F-54 PERFORMANCE



FM97F-107 PERFORMANCE



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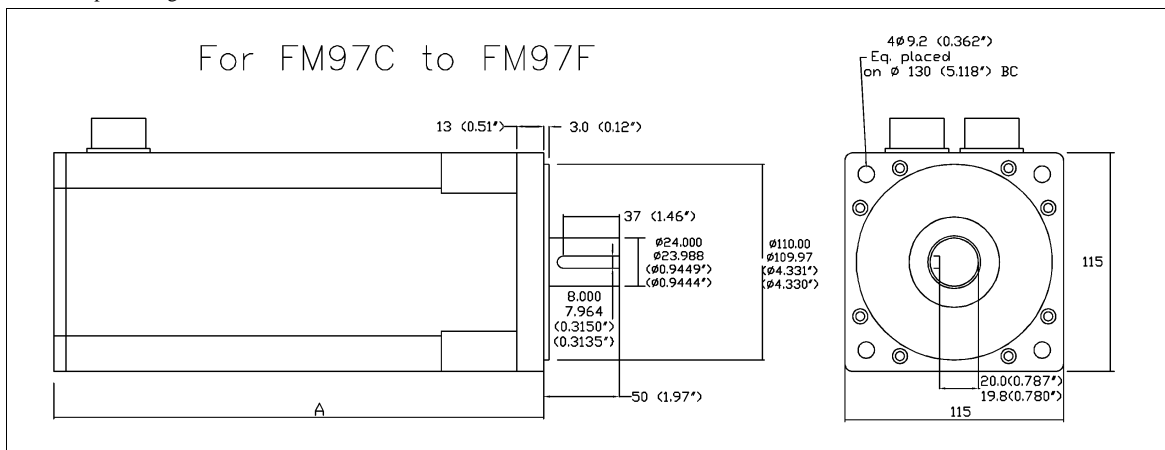
FM Brushless Motor Performance

FM97 Series Motor Data 115 mm Frame 460 V

Motor Parameters	Units	FM97B-114	FM97B-215	FM97D-114	FM97D-215	FM97F-129	FM97F-236
Horsepower	HP	2.4	1.3	3.8	2.3	4.6	3.0
Kilowatts	KW	1.8	1.0	2.8	1.7	3.4	2.3
Max. Speed	RPM	3000	1500	3000	1500	3000	1500
Rated Speed	RPM	3000	1500	3000	1500	3000	1500
Continuous Rated Torque	Nm(In-Lbs)	5.7 (50)	6.2 (55)	9.1 (80)	10.9 (96)	10.9 (96)	14.5 (128)
Continuous Stall Torque	Nm(In-Lbs)	6.6 (58)	6.6 (58)	11.5 (102)	11.5 (102)	16.0 (141)	16.0 (141)
Peak Torque	Nm(In-Lbs)	17.0 (150)	18.7 (165)	27.1 (240)	32.6 (288)	32.6 (288)	43.4 (384)
Continuous Line Current	Amps RMS	3.5	2.0	5.5	3.5	5.9	4.3
Peak Current	Amps RMS	10.4	6.1	16.5	10.5	17.6	12.8
Torque Constant K_T	Nm/Amps (RMS)	1.66	3.12	1.66	3.12	1.87	3.42
Back EMF Constant K_B	Vrms/Krpm	114.4	214.6	114.4	214.6	128.7	236
DC Resistance	Ohms	8.3	30.4	2.9	10.6	2.2	7.5
Inductance	Millihenries	43.6	154	21.8	76.8	18.4	61.9
Rotor Inertia	Kg-M ² (In-Lbs-Sec ²)	0.00051 (0.0045)	0.00051 (0.0045)	0.00096 (0.0085)	0.00096 (0.0085)	0.0014 (0.012)	0.0014 (0.012)
Static Friction	Nm(In-Lbs)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)
Motor Weight	Kg(Lbs)	8 (18)	8 (18)	11.5(25)	11.5(25)	15 (33)	15 (33)
Maximum Line Voltage	Vrms	460	460	460	460	460	460
Number of Poles		6	6	6	6	6	6

Notes:

1. Continuous rating @25°C. Motor mounted on a 300 mm X 300 mm X 6 mm Aluminum heatsink. Maximum winding temperature 155°C.
2. Test drive input voltage was 460 Vac.



Model	FM97B-114	FM97B-215	FM97D-114	FM97D-215	FM97F-129	FM97F-236
A	240 (9.45")	240 (9.45")	290 (11.42")	290 (11.42")	340(13.39")	340 (13.39")

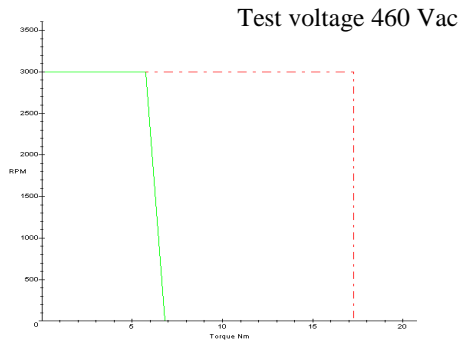
- Notes:**
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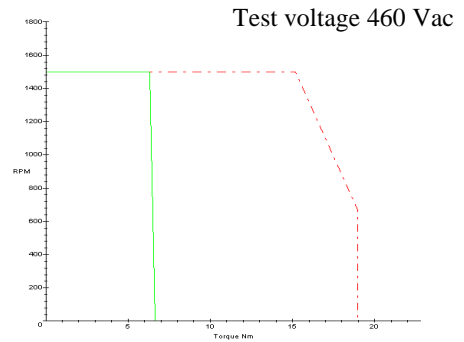
FM Brushless Motor Performance

FM97 Series Motor Data 115 mm Frame 460 Vac

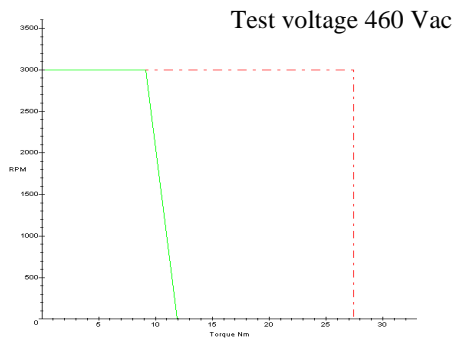
FM97B-114 PERFORMANCE



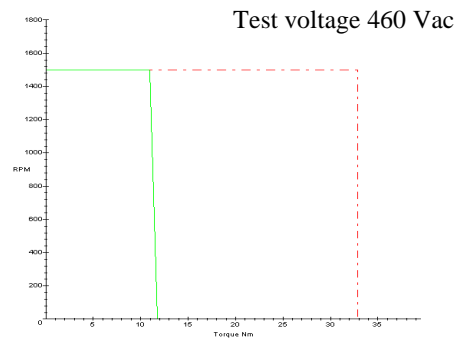
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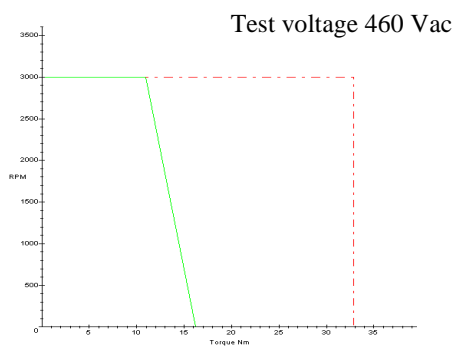
FM97D-114 PERFORMANCE



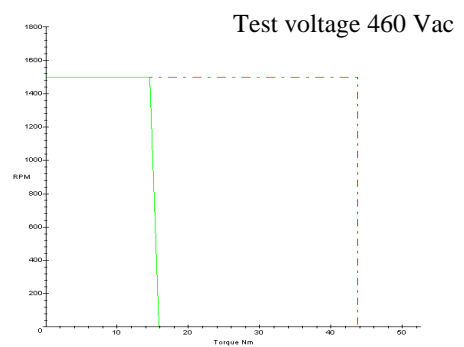
FM97D-215 PERFORMANCE



FM97F-129 PERFORMANCE



FM97F-236 PERFORMANCE



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FM97 Motor Connectors and Connector Pin Outs

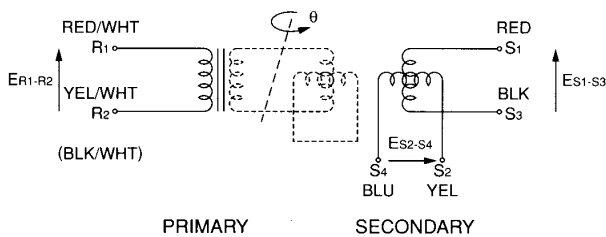
Motor Connector (PT02E-14-04P) Straight Mating Plug: PT06E-14-04S		
Pin	Function	Wire Color
A	ϕU	Red
B	ϕV	Black
C	ϕW	White
D	GND	Green

Resolver Connector(PT02E-14-12P) Straight Mating Plug: PT06E-14-12S		
Pin	Function	Wire Color
A	COS-(S1)	Red
B	COS+(S3)	Black
C	SIN-(S2)	Yellow
D	SIN+(S4)	Blue
E	Excit (R1)	Red/White
F	Excit GND (R2)	Yellow/White
G	THERM	Green
H	THERM	Green
J		
K	* BRK(+)	
L		
M	* BRK(-)	

* For brake option only.

RESOLVER ELECTRICAL SPECIFICATIONS:

1. Operation temperature: -55°C to 155°C
2. Maximum speed: 10,000 rpm
3. Dielectric strength: Vac 500, 1 minute
4. Excitation voltage: 7 Vrms 10 KHz
5. Electric error: $\pm 10'$ Max.
6. Transformation ratio: 0.5 nominal



Excitation : $E_{R1-R2} = E_{sin} \omega t$
 Output : $E_{S1-S3} = K E_{R1-R2} \cos \theta$
 $E_{S2-S4} = K E_{R1-R2} \sin \theta$
 K : Transformation Ratio

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