GLENTEK BRUSHLESS SERVO MOTORS
GMBF5000 SERIES

Revision: 1/22/2019

Glentek's GMBF5000 series of high performance, permanent magnet Brushless servo motors utilize traditional ferrite magnets which are ideal for cost sensitive applications. This helps to reduce the mechanical shaft resonance which allows higher servo gains with increased stability. In addition, all frame sizes incorporate skewed stators which provide ultra smooth operation (i.e. low cogging torque) at all speeds.

- Continuous Torque Range:
32.6 Lb-in (3.68 Nm) to 75.0 Lb-in (8.47 Nm)
- Peak Torque Range:
97.8 Lb-in (11.04 Nm) to 225.0 Lb-in (25.41 Nm)

GMBF5000 SERIES FEATURES
Traditional ferrite magnet design, which are ideal for cost sensitive applications.
Special design provides ultra smooth operation (i.e. low cogging torque) at all speeds.
Worldwide standard mounting configurations are available (English, Metric, and NEMA 56C). Optional custom mounting configurations are available to meet virtually any requirement.
Normally closed thermal switch provides over temperature protection.
Encoder with commutation tracks, brushless resolvers or Hall sensors are standard feedback devices offered
Various electrical windings are available as standard to suit both low (120 VAC) and high (230 VAC) voltage drives in order to provide optimum speed and torque characteristics. Optional custom electrical windings are available.
Shaft Keyway.
Class H insulation standard.
Standard operating temperature is dependent on the feedback device installed. Motors with resolver feedback can be specially configured to operate down to -40°C.
Optional 24VDC holding brakes are available.
Constructed to withstand the toughest industrial environment with rugged, high performance bearings and TENV construction with IP65 sealing standard
RoHS compliant.
CE marked.
UL Recognized Component for US and Canada.

GMBF5000 SERIES ENVIRONMENTAL CONDITIONS	
Storage Temperature:	-20°C to 70°C
Operating Temperature:	Standard: -20°C to 40°C, without derating, derate torque 10% per 10°C above 40°C Special: -40°C to 40°C, without derating, derate torque 10% per 10°C above 40°C
Humidity:	5% to 95% relative humidity, non-condensing
Altitude:	Up to 1000m without derating, derate torque 10% per 1000m above 1000m

GMBF5000 SERIES SELECTION TABLE

K_T = Torque Constant • K_V = BEMF = V_{RMS} Phase-to-Phase/1000 RPM • R_A = Phase-to-Phase Resistance • L_A = Phase-to-Phase Inductance

Model Number	Power @ Rated Speed		Speed, RPM		Cont. Stall Rating			Peak Stall Rating			K_T		K_V	R_A	L_A	Rotor Inertia	
	HP	KW	Max	Rated	Lb-in	Nm	Amps	Lb-in	Nm	Amps	Lb-in/A	Nm/A	V	Ω	mH	Lb-in-sec²	Kg-m²
GMBF5030-25	1.17	0.87	3500	2800	33	3.68	11.5	98.0	11.04	34.5	2.82	0.32	25	0.7	3.1	0.014	0.001582
GMBF5030-50	1.17	0.87	3500	2800	33	3.68	5.8	98.0	11.04	17.4	5.65	0.64	50	2.3	10.2	0.014	0.001582
GMBF5030-61	1.01	0.75	3000	2400	33	3.68	4.4	98.0	11.04	13.2	7.46	0.84	66	4.6	19.9	0.014	0.001582
GMBF5030-75	0.84	0.62	2500	2000	33	3.68	3.8	98.0	11.04	11.4	8.47	0.96	75	4.8	23	0.014	0.001582
GMBF5040-25	1.42	1.06	3500	2800	40	4.52	14.2	120.0	13.56	42.6	2.82	0.32	25	0.3	3	0.019	0.002147
GMBF5040-50	1.42	1.06	3500	2800	40	4.52	7.1	120.0	13.56	21.3	5.65	0.64	50	1.4	12	0.019	0.002147
GMBF5040-75	1.02	0.76	2500	2000	40	4.52	4.7	120.0	13.56	14.1	8.47	0.96	75	3.5	28	0.019	0.002147
GMBF5060-25	2.67	1.99	3500	2800	75	8.47	26.6	225.0	25.41	79.8	2.82	0.32	25	0.2	2	0.028	0.003164
GMBF5060-50	2.67	1.99	3500	2800	75	8.47	13.3	225.0	25.41	39.9	5.65	0.64	50	0.9	7	0.028	0.003164
GMBF5060-75	1.90	1.42	2500	2000	75	8.47	8.9	225.0	25.41	26.7	8.47	0.96	75	2.1	11	0.028	0.003164

NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink. The values for Max and Rated Speed are for motors operated with a 230 VAC power supply

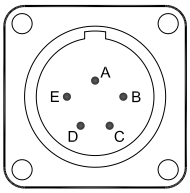
BRAKE OPTION

Brake requires 24V DC input voltage. The values for "Extension" represent the nominal maximum length that the brake will add to the motor. For some models, the extension will be less. Please contact one of our sales engineers for the exact values.

Extension	Torque		Power
in. (mm)	Lb-in	Nm	Watts
2.25 (57)	318	36	26

CONNECTORS & PIN-OUT INFORMATION

5-Pin MS connector MS3102R22-22P



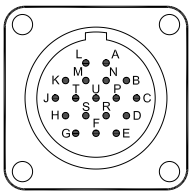
FRONT VIEW

Straight Mating Connector, MS3116F14-5S

Pin#	Function
A	Phase R
B	Phase S
C	Phase T
D	Case Ground

Special mounting options are available. Please contact a Glentek Sales Engineer for detailed information.

18-Pin MS connector MS3112E14-18P

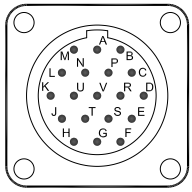


FRONT VIEW

Straight Mating Connector, MS3116F14-18S

Pin#	Function
	Resolver
A	Brake +
B	Brake -
C	Brake Shield
D	Resolver Shield
E	Reference
F	Since Ground
G	Cosine Ground
H	Sine
J	N/C
K	N/C
L	N/C
M	N/C
N	Temperature Switch
P	N/C
R	Reference Ground
S	Cosine
T	N/C
U	Temperature Switch

19-Pin MS connector MS3112E14-19P

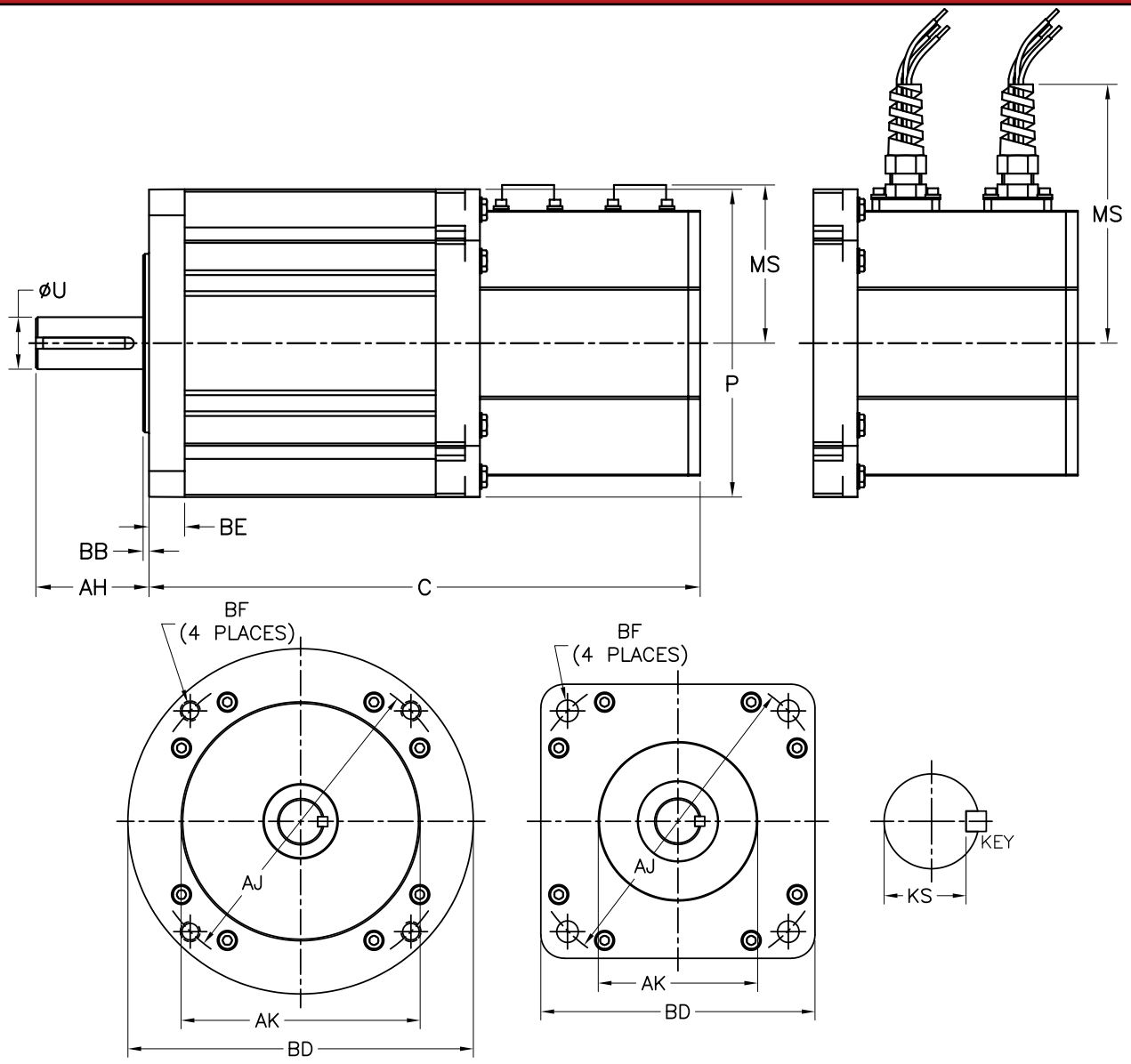


FRONT VIEW

Straight Mating Connector, MS3116F14-19S

Pin#	Function	
	Resolver	Encoder with Commutation Track
A	Temperature Switch	Temperature Switch
B	Temperature Switch	Temperature Switch
C	Resolver Shield	Encoder Shield
D	N/C	Encoder +5VDC
E	N/C	Encoder Common
F	Cosine Ground	Channel A+
G	Cosine +	Channel A-
H	Sine Ground	Channel B+
J	Reference Ground	Channel B-
K	Reference	Channel Z+
L	N/C	Channel Z-
M	N/C	Comm. Track S1+
N	N/C	Comm. Track S1-
P	N/C	Comm. Track S2+
R	N/C	Comm. Track S2-
S	N/C	Comm. Track S3+
T	N/C	Comm. Track S3-
U	Brake +	Brake +
V	Brake -	Brake -

GMBF5000 SERIES DIMENSIONS



Model Number	Kg (lbs.)	C (max)	P (max)	Shaft				Flange/Face				Mounting Hole		
				AH	U	KEY	KS	AK	BB	BD	BE	AJ	BF Dia.	Tap
GMBF5030-XXX-M	**10.2** (22.4)	**294.4** (11.6)	**131.6** (5.18)	**50.00** (1.97)	**24.00** (0.945)	**M8 X M7 X 38**	**19.8 - 20.0**	**130.00** (5.118)	**3.60** (0.142)	**142.00** (5.59)	**15.4** (0.61)	**165.00** (6.496)	**11.00** (0.433)	**THRU**
GMBF5040-XXX-M	**12.5** (27.5)	**303.8** (12.0)	**131.6** (5.18)	**50.00** (1.97)	**24.00** (0.945)	**M8 X M7 X 38**	**19.8 - 20.0**	**130.00** (5.118)	**3.60** (0.142)	**142.00** (5.59)	**15.4** (0.61)	**165.00** (6.496)	**11.00** (0.433)	**THRU**
GMBF5060-XXX-M	**15.9** (35.0)	**370.8** (14.6)	**131.6** (5.18)	**50.00** (1.97)	**24.00** (0.945)	**M8 X M7 X 38**	**19.8 - 20.0**	**130.00** (5.118)	**3.60** (0.142)	**142.00** (5.59)	**15.4** (0.61)	**165.00** (6.496)	**11.00** (0.433)	**THRU**

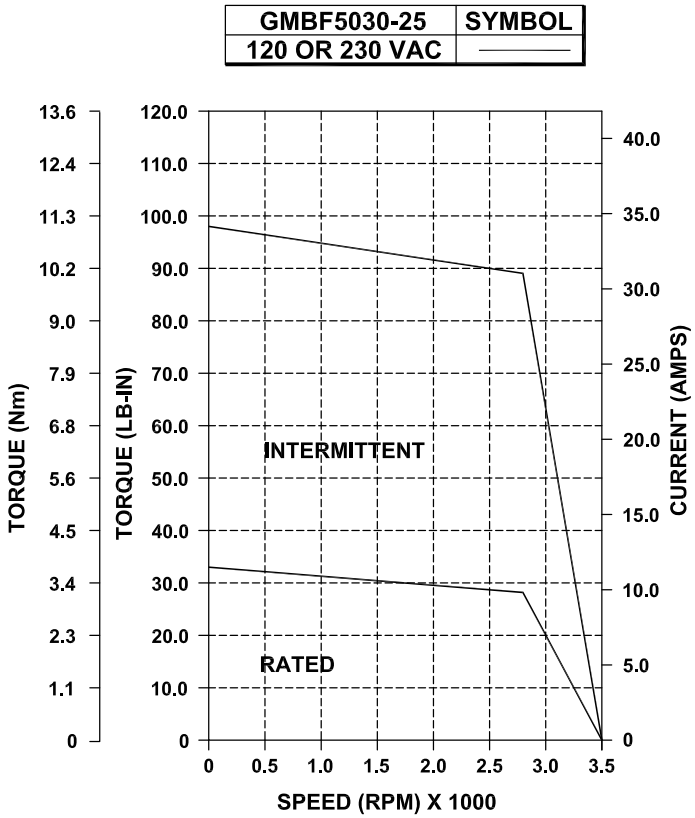
Note: Dimensions are in **mm** (inches)

Model Number	Lbs. (Kg)	C (max)	P (max)	Shaft				Flange/Face				Mounting Hole		
				AH	U	KEY	KS	AK	BB	BD	BE	AJ	BF Dia.	Tap
GMBF5030-XXX-E	**22.5** (10.2)	**11.59** (294.4)	**5.18** (131.6)	**1.90** (48.3)	**0.8750** (22.23)	**.188 SQ. X 1.50**	**.761 - .771**	**3.000** (76.20)	**0.10** (2.54)	**5.18** (131.6)	**0.60** (15.24)	**5.875** (149.23)	**0.406** (10.31)	**THRU**
GMBF5040-XXX-E	**27.5** (12.5)	**11.96** (303.8)	**5.18** (131.6)	**1.90** (48.3)	**0.8750** (22.23)	**.188 SQ. X 1.50**	**.761 - .771**	**3.000** (76.20)	**0.10** (2.54)	**5.18** (131.6)	**0.60** (15.24)	**5.875** (149.23)	**0.406** (10.31)	**THRU**
GMBF5060-XXX-E	**35.0** (15.9)	**14.60** (370.8)	**5.18** (131.6)	**1.90** (48.3)	**0.8750** (22.23)	**.188 SQ. X 1.50**	**.761 - .771**	**3.000** (76.20)	**0.10** (2.54)	**5.18** (131.6)	**0.60** (15.24)	**5.875** (149.23)	**0.406** (10.31)	**THRU**
NEMA 56C				**2.06** (52.3)	**0.6250** (15.88)	**.188 SQ. X 1.50**	**.507 - .517**	**4.500** (114.30)	**0.12** (3.05)	**6.50** (165.1)	**0.61** (15.49)	**5.875** (149.23)		**3/8-16 THRU**

Note: Dimensions are in **inches** (mm)

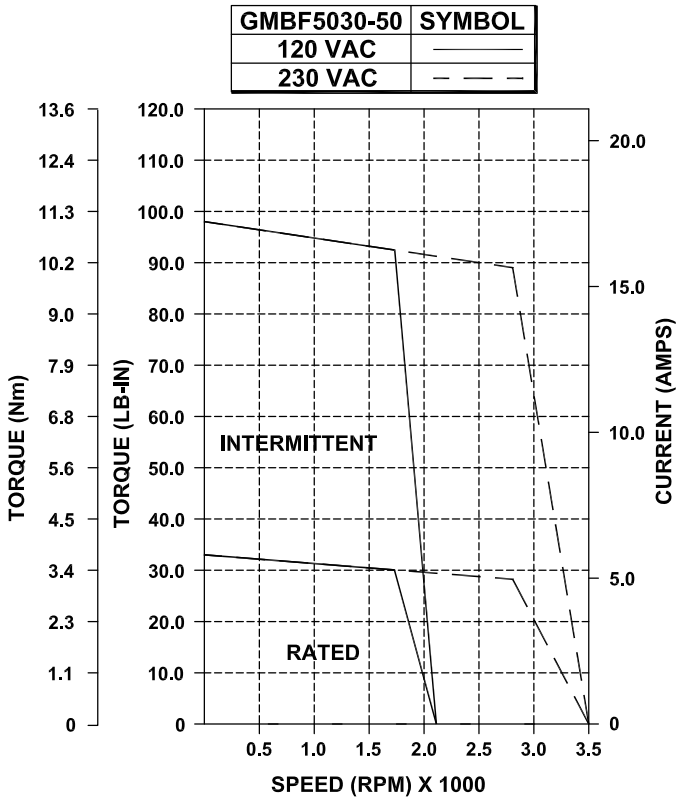
Connectors	5-Pin	18-Pin	19-Pin	Strain Relief
MS inches (mm)	**2.62** (66.5)	**2.62** (66.5)	**2.62** (66.5)	**4.35** (110.4)
MS mm (inches)	**66.5** (2.62)	**66.5** (2.62)	**66.5** (2.62)	**81.1** (3.19)

GMBF5030-25 PERFORMANCE DATA



Power @ Rated Speed	**HP**	1.17
	KW	0.87
Speed, RPM	**Max.**	3500
	Rated	2800
Cont. Stall Rating	**Lb-in**	33
	Nm	3.68
	Amps	11.5
Peak Stall Rating	**Lb-in**	98.0
	Nm	11.04
	Amps	34.5
Torque Constant	**Lb-in/A**	2.82
	Nm/A	0.32
Back EMF	**V/Krpm**	25
Resistance	**Ohms**	0.7
Inductance	**mH**	3.1
Armature Inertia	**Lb-in-sec²**	0.014
	Kg-m²	0.001582

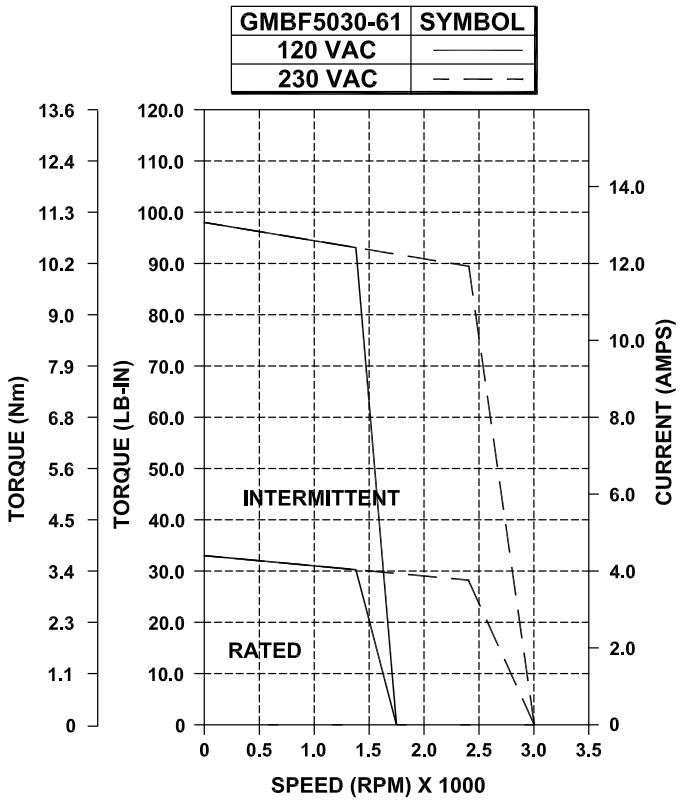
GMBF5030-50 PERFORMANCE DATA



Power @ Rated Speed	**HP**	1.17
	KW	0.87
Speed, RPM	**Max.**	3500
	Rated	2800
Cont. Stall Rating	**Lb-in**	33
	Nm	3.68
	Amps	5.8
Peak Stall Rating	**Lb-in**	98.0
	Nm	11.04
	Amps	17.4
Torque Constant	**Lb-in/A**	5.65
	Nm/A	0.64
Back EMF	**V/Krpm**	50
Resistance	**Ohms**	2.3
Inductance	**mH**	10.2
Armature Inertia	**Lb-in-sec²**	0.014
	Kg-m²	0.001582

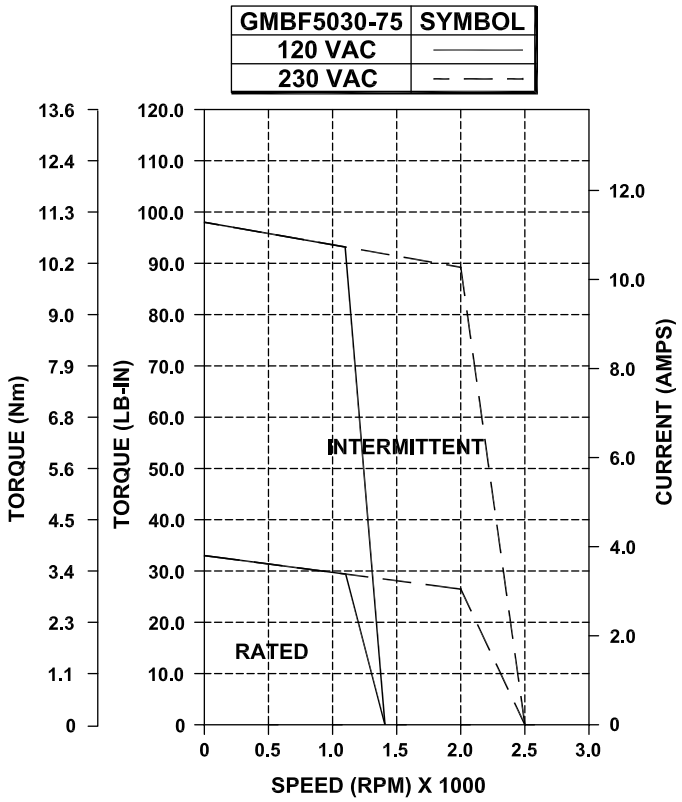
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

GMBF5030-61 PERFORMANCE DATA



Power @ Rated Speed	**HP**	1.01
	KW	0.75
Speed, RPM	**Max.**	3000
	Rated	2400
Cont. Stall Rating	**Lb-in**	33
	Nm	3.68
	Amps	4.4
Peak Stall Rating	**Lb-in**	98.0
	Nm	11.04
	Amps	13.2
Torque Constant	**Lb-in/A**	7.46
	Nm/A	0.84
Back EMF	**V/Krpm**	66
Resistance	**Ohms**	4.6
Inductance	**mH**	19.9
Armature Inertia	**Lb-in-sec²**	0.014
	Kg-m²	0.001582

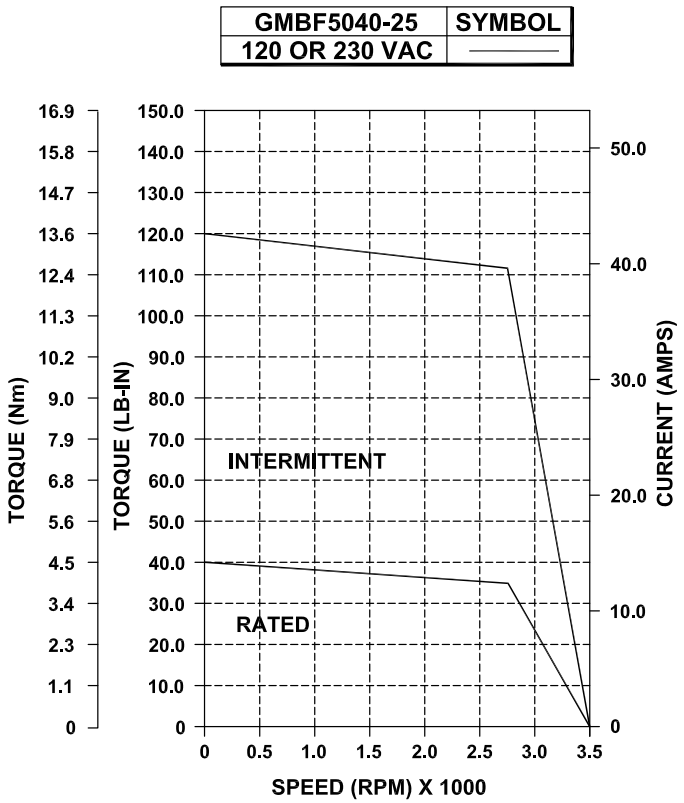
GMBF5030-75 PERFORMANCE DATA



Power @ Rated Speed	**HP**	0.84
	KW	0.62
Speed, RPM	**Max.**	2500
	Rated	2000
Cont. Stall Rating	**Lb-in**	33
	Nm	3.68
	Amps	3.8
Peak Stall Rating	**Lb-in**	98.0
	Nm	11.04
	Amps	11.4
Torque Constant	**Lb-in/A**	8.47
	Nm/A	0.96
Back EMF	**V/Krpm**	75
Resistance	**Ohms**	4.8
Inductance	**mH**	23
Armature Inertia	**Lb-in-sec²**	0.014
	Kg-m²	0.001582

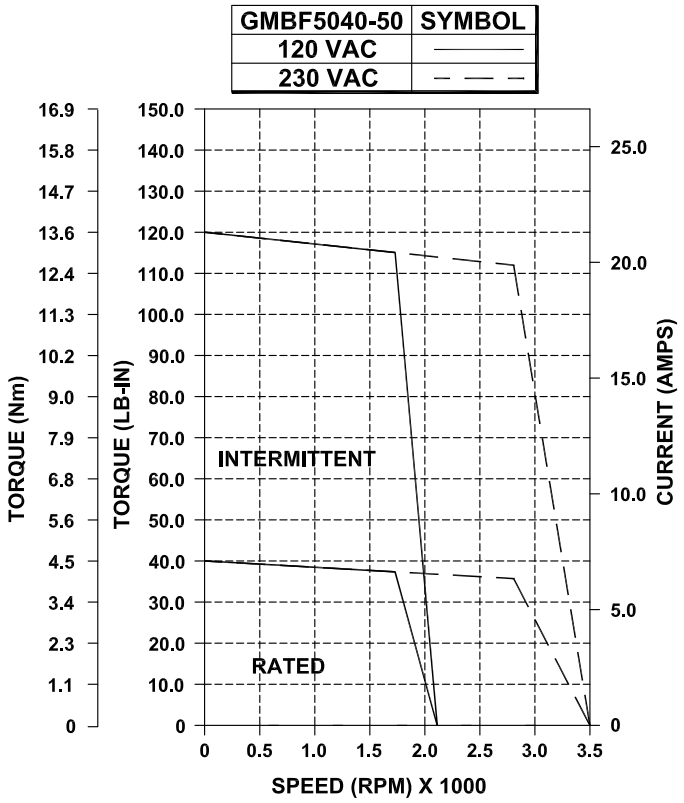
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

GMBF5040-25 PERFORMANCE DATA



Power @ Rated Speed	HP	1.42
	KW	1.06
Speed, RPM	Max.	3500
	Rated	2800
Cont. Stall Rating	Lb-in	40
	Nm	4.52
	Amps	14.2
Peak Stall Rating	Lb-in	120.0
	Nm	13.56
	Amps	42.6
Torque Constant	Lb-in/A	2.82
	Nm/A	0.32
Back EMF	V/Krpm	25
Resistance	Ohms	0.3
Inductance	mH	3
Armature Inertia	Lb-in-sec²	0.019
	Kg-m²	0.002147

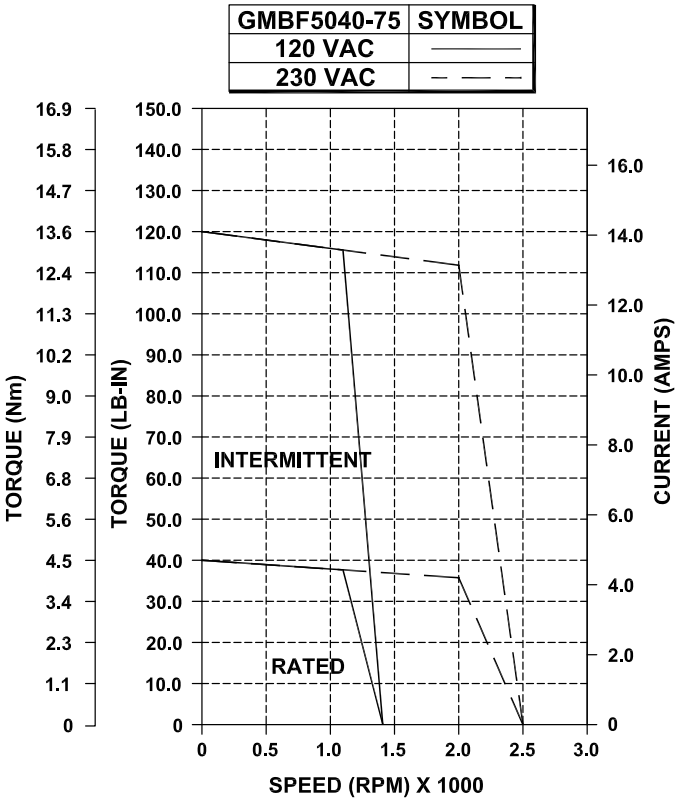
GMBF5040-50 PERFORMANCE DATA



Power @ Rated Speed	HP	1.42
	KW	1.06
Speed, RPM	Max.	3500
	Rated	2800
Cont. Stall Rating	Lb-in	40
	Nm	4.52
	Amps	7.1
Peak Stall Rating	Lb-in	120.0
	Nm	13.56
	Amps	21.3
Torque Constant	Lb-in/A	5.65
	Nm/A	0.64
Back EMF	V/Krpm	50
Resistance	Ohms	1.4
Inductance	mH	12
Armature Inertia	Lb-in-sec²	0.019
	Kg-m²	0.002147

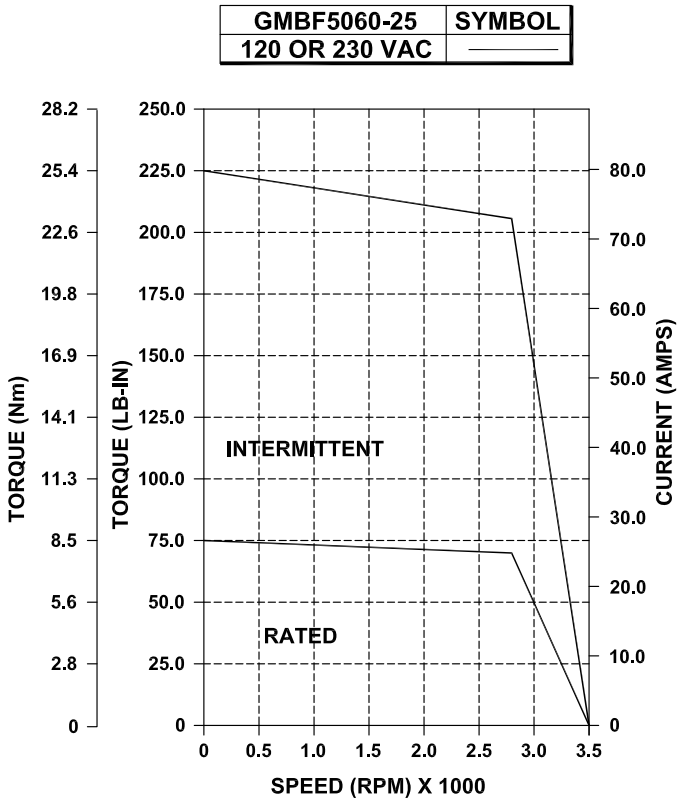
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

GMBF5040-75 PERFORMANCE DATA



Power @ Rated Speed	**HP**	1.02
	KW	0.76
Speed, RPM	**Max.**	2500
	Rated	2000
Cont. Stall Rating	**Lb-in**	40
	Nm	4.52
	Amps	4.7
Peak Stall Rating	**Lb-in**	120.0
	Nm	13.56
	Amps	14.1
Torque Constant	**Lb-in/A**	8.47
	Nm/A	0.96
Back EMF	**V/Krpm**	75
Resistance	**Ohms**	3.5
Inductance	**mH**	28
Armature Inertia	**Lb-in-sec²**	0.019
	Kg-m²	0.002147

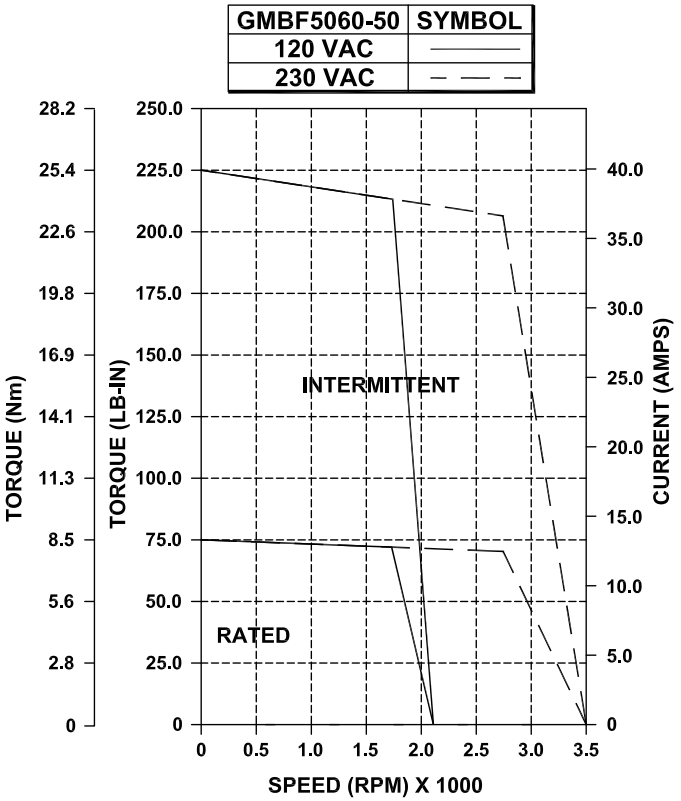
GMBF5060-25 PERFORMANCE DATA



Power @ Rated Speed	**HP**	2.67
	KW	1.99
Speed, RPM	**Max.**	3500
	Rated	2800
Cont. Stall Rating	**Lb-in**	75
	Nm	8.47
	Amps	26.6
Peak Stall Rating	**Lb-in**	225.0
	Nm	25.41
	Amps	79.8
Torque Constant	**Lb-in/A**	2.82
	Nm/A	0.32
Back EMF	**V/Krpm**	25
Resistance	**Ohms**	0.2
Inductance	**mH**	2
Armature Inertia	**Lb-in-sec²**	0.028
	Kg-m²	0.003164

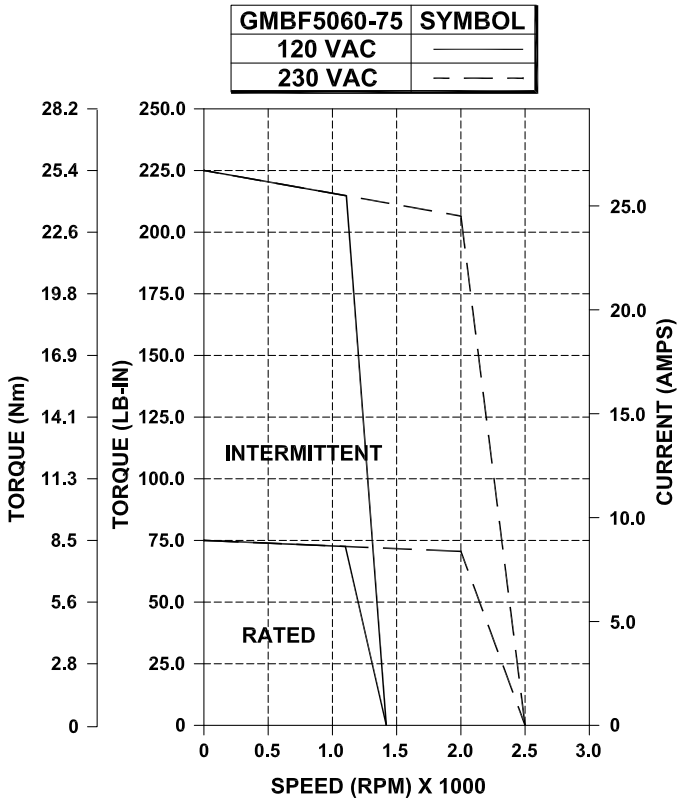
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

GMBF5060-50 PERFORMANCE DATA



Power @ Rated Speed	**HP**	2.67
	KW	1.99
Speed, RPM	**Max.**	3500
	Rated	2800
Cont. Stall Rating	**Lb-in**	75
	Nm	8.47
	Amps	13.3
Peak Stall Rating	**Lb-in**	225.0
	Nm	25.41
	Amps	39.9
Torque Constant	**Lb-in/A**	5.65
	Nm/A	0.64
Back EMF	**V/Krpm**	50
Resistance	**Ohms**	0.9
Inductance	**mH**	7
Armature Inertia	**Lb-in-sec²**	0.028
	Kg-m²	0.003164

GMBF5060-75 PERFORMANCE DATA



Power @ Rated Speed	**HP**	1.90
	KW	1.42
Speed, RPM	**Max.**	2500
	Rated	2000
Cont. Stall Rating	**Lb-in**	75
	Nm	8.47
	Amps	8.9
Peak Stall Rating	**Lb-in**	225.0
	Nm	25.41
	Amps	26.7
Torque Constant	**Lb-in/A**	8.47
	Nm/A	0.96
Back EMF	**V/Krpm**	75
Resistance	**Ohms**	2.1
Inductance	**mH**	11
Armature Inertia	**Lb-in-sec²**	0.028
	Kg-m²	0.003164

NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

GMBF5000 SERIES MODEL NUMBERING

This section explains the model numbering system for Glentek's GMBF5000 Series Brushless Servo Motors. The model numbering system is designed so that you, our customer, will be able to quickly and accurately create the model number for the drive that best suits your requirements. Please complete the drive configuration code you require using the information on this page. After completing your model number, please contact a Gletnek Sales Engineer to confirm that the model number you have created is correct.

GMBF 50 30 - 25 - E - 0 0 3 0 0 1 0 0 - [ ]

Magnet Type F = Ferrite magnet
Frame Size 50 = 5.0" (8 pole) Motor
Stack Length 30 = 3.0 inch stack
Back EMF Constant 25 = 25 V/Krpm
Dimensions E = English
Brake option 0 = No brake installed
Commutation Device 0 = Brushless Resolver
Number of Motor poles 3 = 8 Pole
Flange Type 0 = Standard
Shaft Type 0 = Standard
Lead Termination 1 = Two MS Connectors
Wiring Diagram (MS connector lead termination only) 0 = Glentek Standard
Encoder Option 0 = No encoder installed
Factory Assigned Option leave blank

GMB F [ ][ ] - [ ] - [ ] - [ ][ ][ ][ ][ ][ ][ ][ ] - [ ]

Magnet Type	
F	Ferrite magnets

Frame Size	
50	5.0" Motor

Stack Length			
30	3.0" Stack	60	6.0" Stack
40	4.0" Stack		

Back EMF Constant					
3.0" Stack		4.0" Stack		6.0" Stack	
25	25V/Krpm	25	25V/Krpm	25	25V/Krpm
50	50V/Krpm	50	50V/Krpm	50	50V/Krpm
61	61V/Krpm	75	75V/Krpm	75	75V/Krpm
75	75V/Krpm				
For custom Back EMF, Please Contact Glentek					

Dimensions					
E	English	M	Metric	N	NEMA

Brake Option					
0	No brake installed	1	24 VDC Brake	2	Special

Commutation Device					
0	Brushless Resolver	2	Encoder with commutation tracks	4	Absolute Encoder
1	Hall Effect Sensors	3	Special	5	Sin/Cos Encoder

Number of Motor Poles	
3	8 pole

Flange Type					
0	Standard	1	Special	5	NEMA 56C

Shaft Type					
0	Standard	1	Special	5	NEMA 56C

Lead Termination			
0	One MS Connector	3	Special
1	Two MS Connectors	4	Liquid tight strain relief with flying leads
2	NPT(s) only with flying leads	5	Euro-style connectors

Wiring Diagram (MS connector lead termination only)			
0	Glentek Standard	1	Special

Encoder Option							
0	No encoder installed	4	1250 PPR	8	8192 PPR	C	4096 PPR
1	500PPR	5	2000 PPR	9	5000 PPR	D	3600 PPR
2	1000PPR	6	2500 PPR	A	512 PPR	E	18000 PPR
3	1024PPR	7	Special	B	2048 PPR		

Factory Assigned Option
A numerical code will be assigned by Glentek to motors whose specifications vary from the standard configuration