

GLENTEK BRUSHLESS SERVO MOTORS GMB3500 SERIES

Revision: 1/22/2019



Glentek’s GMB3500 series of high performance, permanent magnet Brushless servo motors utilize high-energy Neodymium-Iron- Boron (NdFeB) magnets, which provide more torque in a smaller package with higher dynamic performance than traditional ferrite magnet designs. In addition, due to high torque to inertia ratio of these motors, they are ideal for applications which require high acceleration and deceleration characteristics or where the physical size of the motor is a major concern.

- Continuous Torque Range:
16 Lb-in (1.81 Nm) to 39.0 Lb-in (4.41 Nm)
- Peak Torque Range:
48.0 Lb-in (5.43 Nm) to 117.0.0 Lb-in (13.23 Nm)

GMB3500 SERIES FEATURES

- High-energy Neodymium-Iron-Boron (NdFeB) magnet design with low inertia rotors provides a high dynamic performance.
- Special design provides ultra smooth operation (i.e. low cogging torque) at all speeds.
- Worldwide standard mounting configurations are available (English, Metric, and NEMA 34).
- 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.

GMB3500 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

GMB3500 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-sec ²	Kg-m ²
GMB3515-23	0.81	0.61	5000*	4000*	16	1.81	6.2	48.0	5.43	18.6	2.60	0.29	23	1.3	4.6	0.00059	0.000067
GMB3515-38	0.81	0.61	5000	4000	16	1.81	3.8	48.0	5.43	11.4	4.25	0.48	37	3.6	13.5	0.00059	0.000067
GMB3515-75	0.41	0.30	2500	2000	16	1.81	1.9	48.0	5.43	5.7	8.50	0.96	75	9.3	36	0.00059	0.000067
GMB3530-24	1.52	1.14	5000*	4000*	30	3.39	11.1	90.0	10.17	33.3	2.71	0.31	24	0.5	2.5	0.0010	0.000113
GMB3530-37	1.52	1.14	5000	4000	30	3.39	7.3	90.0	10.17	21.9	4.14	0.47	36	1.3	5.8	0.0010	0.000113
GMB3530-48	1.22	0.91	4000	3200	30	3.39	5.5	90.0	10.17	16.5	5.42	0.61	48	2.5	10.3	0.0010	0.000113
GMB3530-73	0.76	0.57	2500	2000	30	3.39	3.6	90.0	10.17	10.8	8.27	0.93	73	3.1	16	0.0010	0.000113
GMB3545-25	1.98	1.48	5000*	4000*	39	4.41	13.8	117.0	13.23	41.4	2.82	0.32	25	0.5	2.1	0.0014	0.000158
GMB3545-50	1.58	1.18	4000	3200	39	4.41	6.9	117.0	13.23	20.7	5.65	0.64	50	1.1	5.6	0.0014	0.000158
GMB3545-110	0.69	0.52	1800	1400	39	4.41	3.1	117.0	13.23	9.3	12.43	1.40	110	6.5	33.6	0.0014	0.000158

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.

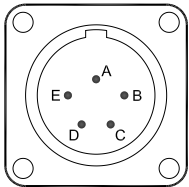
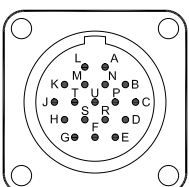
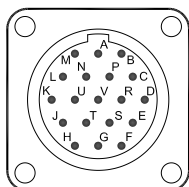
The values for Max and Rated Speed are for motors operated with a 230 VAC power supply.
 * Higher speeds may be attainable depending on the application, contact Glentek for more info.

BRAKE OPTION

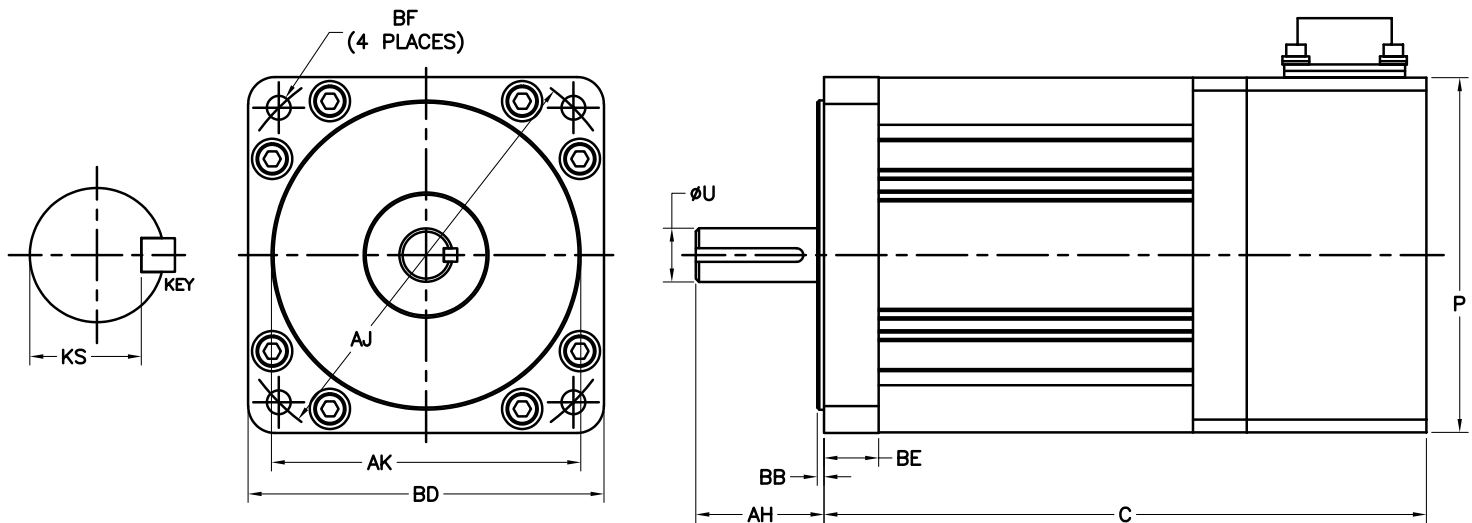
Brake requires 24V DC input voltage. The values for "Extension" represent the nominal maximum length that the brake will add to the motor. For some models, the extension will be less. Please contact one of our sales engineers for the exact values.

Extension	Torque		Power
in. (mm)	Lb-in	Nm	Watts
1.46 (37)	79.6	9	18

CONNECTORS & PIN-OUT INFORMATION

5-Pin MS connector MS3112E14-5P		18-Pin MS connector MS3112E14-18P		19-Pin MS connector MS3112E14-19P		
 <p>FRONT VIEW</p> <p style="font-size: small;">Straight Mating Connector, MS3116F14-5S</p>		 <p>FRONT VIEW</p> <p style="font-size: small;">Straight Mating Connector, MS3116F14-18S</p>		 <p>FRONT VIEW</p> <p style="font-size: small;">Straight Mating Connector, MS3116F14-19S</p>		
Pin#	Function	Pin#	Function	Pin#	Function	
		Resolver		Resolver		Encoder with Commutation Track
A	Phase R	A	Brake +	A	Temperature Switch	Temperature Switch
B	Phase S	B	Brake -	B	Temperature Switch	Temperature Switch
C	Phase T	C	Brake Shield	C	Resolver Shield	Encoder Shield
D	Case Ground	D	Resolver Shield	D	N/C	Encoder +5VDC
Special mounting options are available. Please contact a Glentek Sales Engineer for detailed information.		E	Reference	E	N/C	Encoder Common
		F	Since Ground	F	Cosine Ground	Channel A+
		G	Cosine Ground	H	Sine	Channel A-
		H	Sine	J	N/C	Channel B+
		J	N/C	K	N/C	Channel B-
		K	N/C	L	N/C	Channel Z+
		L	N/C	M	N/C	Channel Z-
		M	N/C	N	Temperature Switch	Comm. Track S1+
		N	Temperature Switch	P	N/C	Comm. Track S1-
		P	N/C	R	Reference Ground	Comm. Track S2+
		R	Reference Ground	S	Cosine	Comm. Track S2-
		S	Cosine	T	N/C	Comm. Track S3+
		T	N/C	U	Temperature Switch	Comm. Track S3-
U	Temperature Switch	U	Brake +	Brake +		
V	Brake -	V	Brake -	Brake -		

GMB3500 SERIES DIMENSIONS

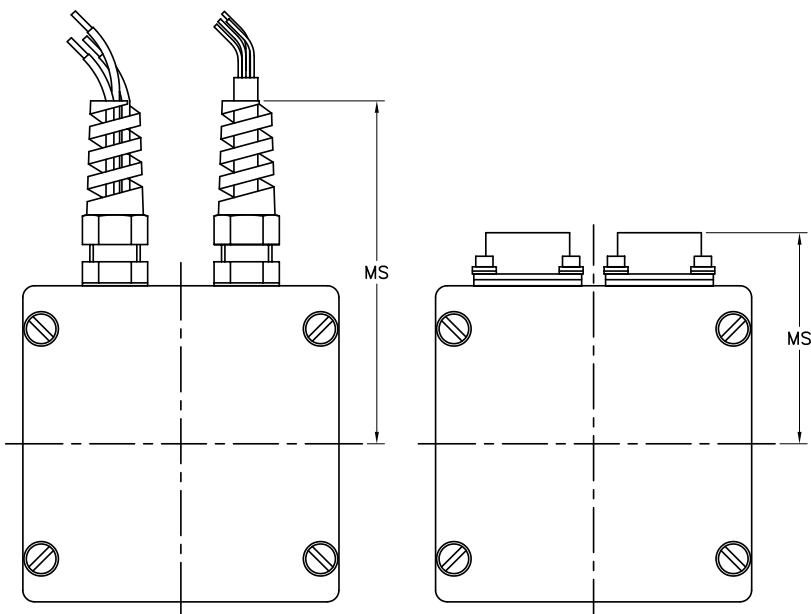


Model Number	Kg (lbs.)	C (max)	P (max)	Shaft				Flange/Face				Mounting Hole		
				AH	U	KEY	KS	AK	BB	BD	BE	AJ	BF Dia.	Tap
GMB3515-XXX-M	3.8 (8.4)	183.0 (7.2)	83.8 (3.30)	30.00 (1.18)	14.00 (0.551)	M5 SQ. X 20	10.9 - 11.0	80.00 (3.150)	3.00 (0.12)	89.00 (3.50)	11.5 (0.45)	100.00 (3.937)	7.00 (0.276)	THRU
GMB3530-XXX-M	5.4 (11.9)	222.4 (8.8)	83.8 (3.30)	30.00 (1.18)	14.00 (0.551)	M5 SQ. X 20	10.9 - 11.0	80.00 (3.150)	3.00 (0.12)	89.00 (3.50)	11.5 (0.45)	100.00 (3.937)	7.00 (0.276)	THRU
GMB3545-XXX-M	6.6 (14.5)	261.5 (10.3)	83.8 (3.30)	30.00 (1.18)	14.00 (0.551)	M5 SQ. X 20	10.9 - 11.0	80.00 (3.150)	3.00 (0.12)	89.00 (3.50)	11.5 (0.45)	100.00 (3.937)	7.00 (0.276)	THRU

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

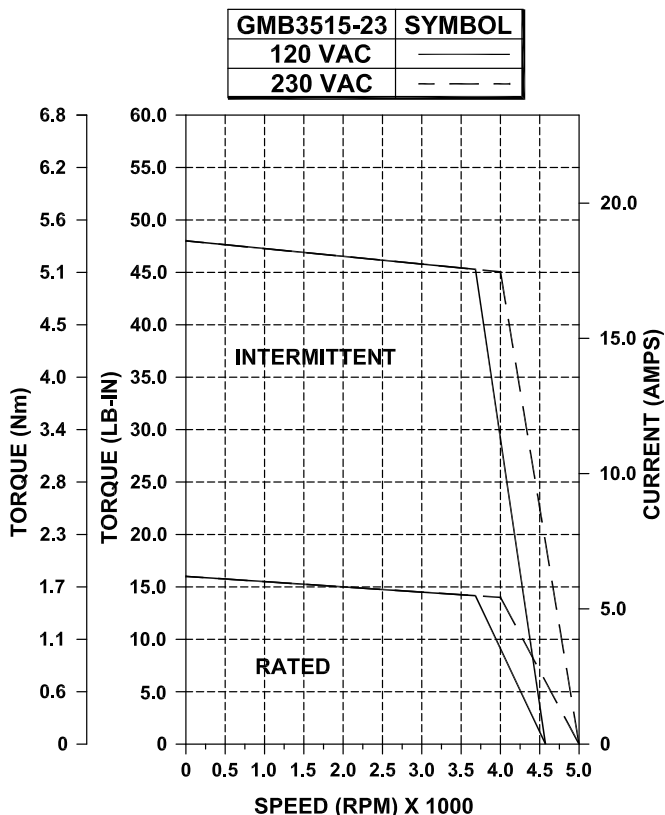
Model Number	Lbs. (Kg)	C (max)	P (max)	Shaft				Flange/Face				Mounting Hole		
				AH	U	KEY	KS	AK	BB	BD	BE	AJ	BF Dia.	Tap
GMB3515-XXX-E	8.4 (3.8)	7.20 (182.88)	3.30 (83.8)	1.19 (30.2)	0.4997 (12.69)	.125 SQ. X 1.00	.420 - .430	2.877 (73.08)	0.06 (1.52)	3.31 (84.07)	0.51 (12.95)	3.875 (98.43)	0.224 (5.69)	THRU
GMB3530-XXX-E	11.9 (5.4)	8.75 (222.25)	3.30 (83.8)	1.19 (30.2)	0.4997 (12.69)	.125 SQ. X 1.00	.420 - .430	2.877 (73.08)	0.06 (1.52)	3.31 (84.07)	0.51 (12.95)	3.875 (98.43)	0.224 (5.69)	THRU
GMB3545-XXX-E	14.5 (6.6)	10.29 (261.37)	3.30 (83.8)	1.19 (30.2)	0.4997 (12.69)	.125 SQ. X 1.00	.420 - .430	2.877 (73.08)	0.06 (1.52)	3.31 (84.07)	0.51 (12.95)	3.875 (98.43)	0.224 (5.69)	THRU
NEMA 34				1.19 (30.2)	0.3750 (9.53)			2.877 (73.08)	0.06 (1.52)	3.42 (86.87)	0.51 (12.95)	3.875 (98.43)	0.224 (5.69)	THRU

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



Connectors	MS inches (mm)	MS mm (inches)
5-Pin	2.20 (56.0)	56.0 (2.20)
18-Pin	2.20 (56.0)	56.0 (2.20)
19-Pin	2.20 (56.0)	56.0 (2.20)
Strain Relief	3.58 (90.9)	78.0 (3.06)

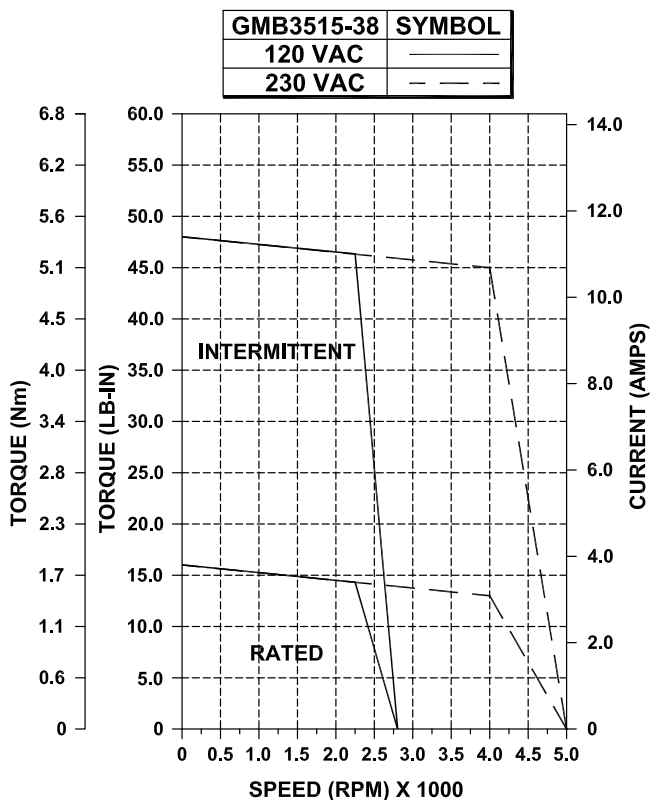
GMB3515-23 PERFORMANCE DATA



Power @ Rated Speed	HP	0.81
	KW	0.61
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	16
	Nm	1.81
	Amps	6.2
Peak Stall Rating	Lb-in	48.0
	Nm	5.43
	Amps	18.6
Torque Constant	Lb-in/A	2.60
	Nm/A	0.29
Back EMF	V/Krpm	23
Resistance	Ohms	1.3
Inductance	mH	4.6
Armature Inertia	Lb-in-sec²	0.00059
	Kg-m²	0.000067

* Higher speeds may be attainable depending on the application, contact Glentek for more info

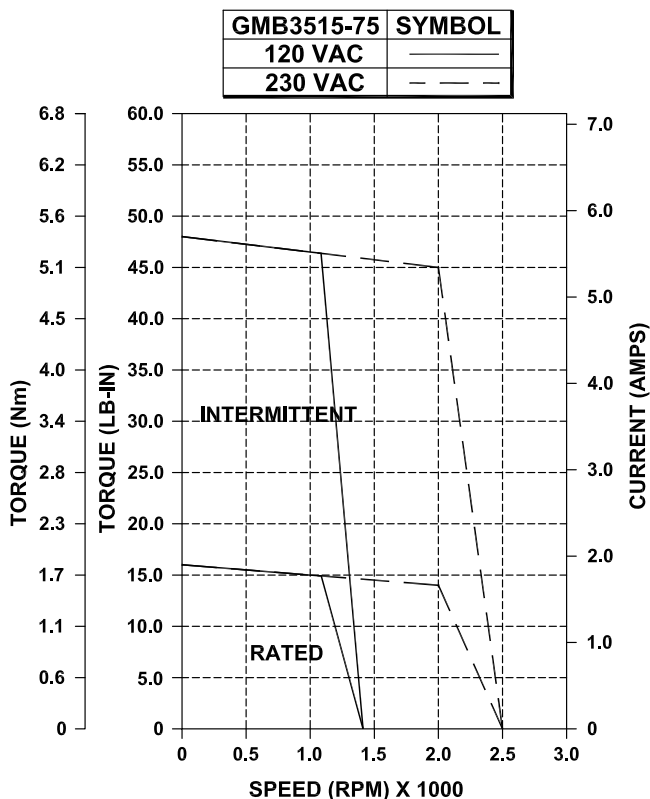
GMB3515-38 PERFORMANCE DATA



Power @ Rated Speed	HP	0.81
	KW	0.61
Speed, RPM	Max.	5000
	Rated	4000
Cont. Stall Rating	Lb-in	16
	Nm	1.81
	Amps	3.8
Peak Stall Rating	Lb-in	48.0
	Nm	5.43
	Amps	11.4
Torque Constant	Lb-in/A	4.25
	Nm/A	0.48
Back EMF	V/Krpm	37
Resistance	Ohms	3.6
Inductance	mH	13.5
Armature Inertia	Lb-in-sec²	0.00059
	Kg-m²	0.000067

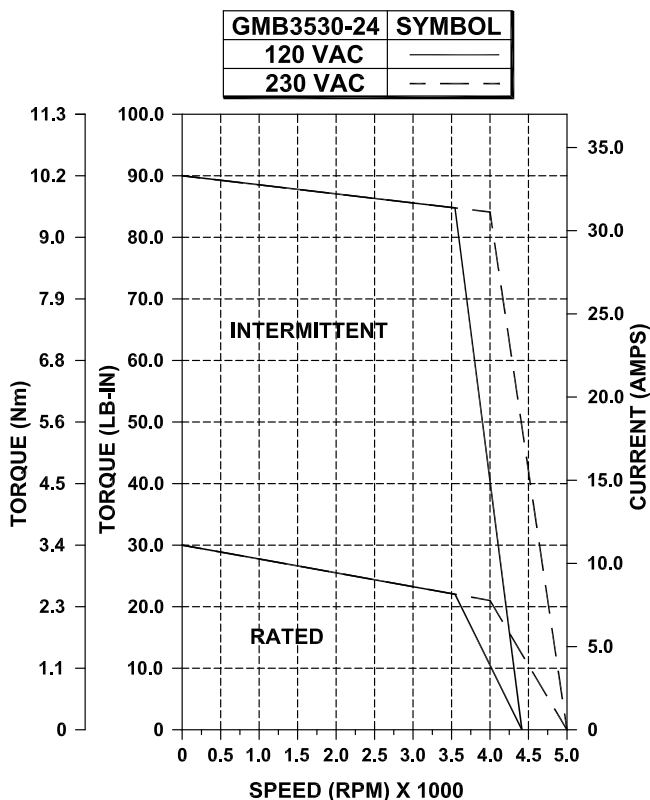
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

GMB3515-75 PERFORMANCE DATA



Power @ Rated Speed	HP	0.41
	KW	0.30
Speed, RPM	Max.	2500
	Rated	2000
Cont. Stall Rating	Lb-in	16
	Nm	1.81
	Amps	1.9
Peak Stall Rating	Lb-in	48.0
	Nm	5.43
	Amps	5.7
Torque Constant	Lb-in/A	8.5
	Nm/A	0.96
Back EMF	V/Krpm	75
Resistance	Ohms	9.3
Inductance	mH	36
Armature Inertia	Lb-in-sec²	0.00059
	Kg-m²	0.000067

GMB3530-24 PERFORMANCE DATA

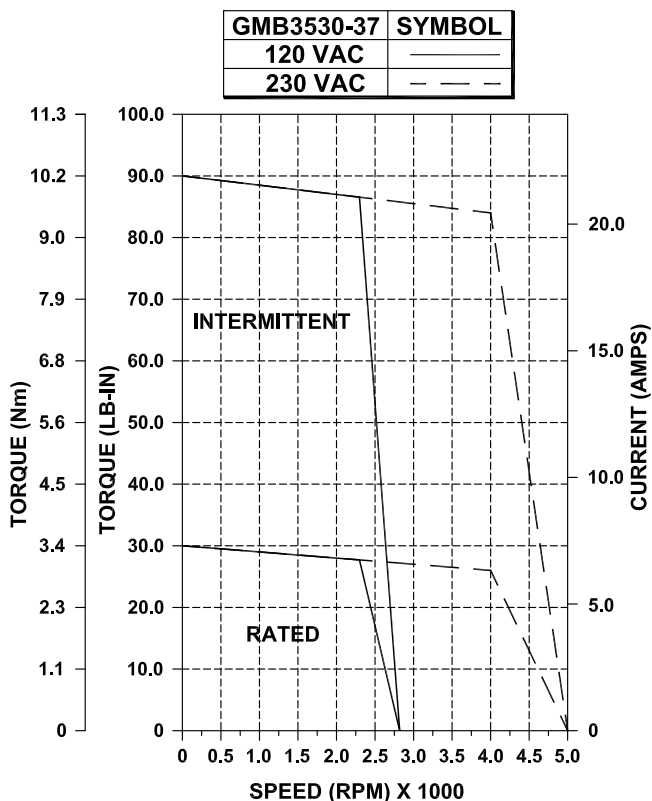


Power @ Rated Speed	HP	1.52
	KW	1.14
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	30
	Nm	3.39
	Amps	11.1
Peak Stall Rating	Lb-in	90.0
	Nm	10.17
	Amps	33.3
Torque Constant	Lb-in/A	2.71
	Nm/A	0.31
Back EMF	V/Krpm	24
Resistance	Ohms	0.5
Inductance	mH	2.5
Armature Inertia	Lb-in-sec²	0.001
	Kg-m²	0.000113

* Higher speeds may be attainable depending on the application, contact Glentek for more info

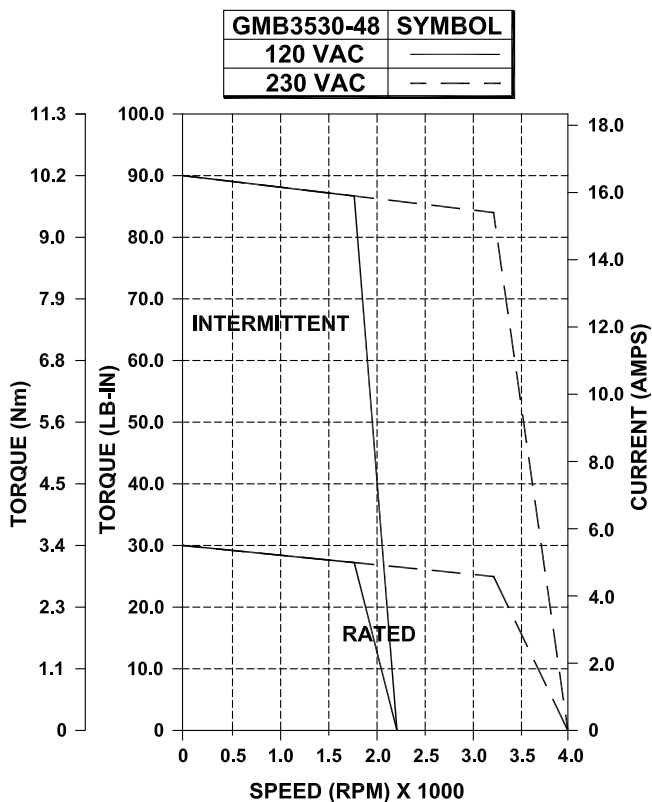
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

GMB3530-37 PERFORMANCE DATA



Power @ Rated Speed	HP	1.52
	KW	1.14
Speed, RPM	Max.	5000
	Rated	4000
Cont. Stall Rating	Lb-in	30
	Nm	3.39
	Amps	7.3
Peak Stall Rating	Lb-in	90.0
	Nm	10.17
	Amps	21.9
Torque Constant	Lb-in/A	4.14
	Nm/A	0.47
Back EMF	V/Krpm	36
Resistance	Ohms	1.3
Inductance	mH	5.8
Armature Inertia	Lb-in-sec²	0.001
	Kg-m²	0.000113

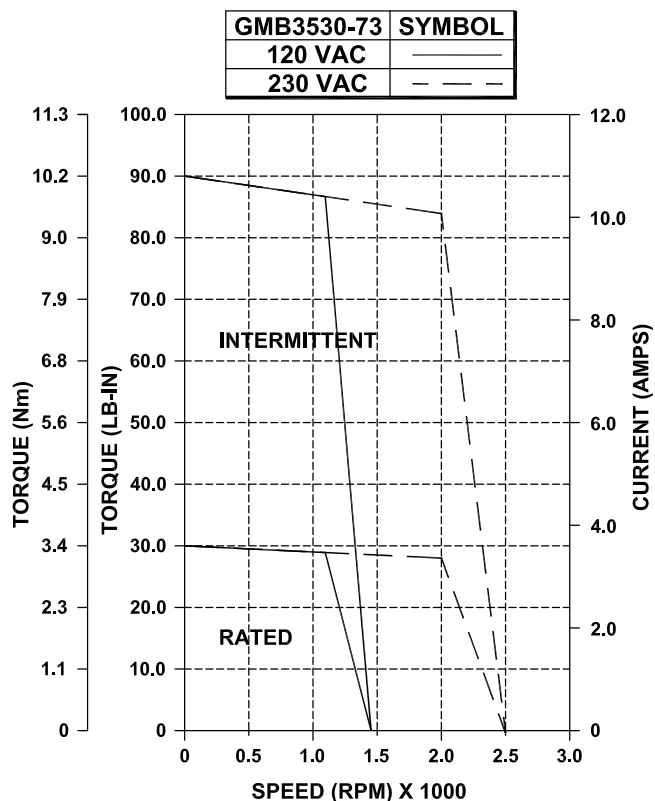
GMB3530-48 PERFORMANCE DATA



Power @ Rated Speed	HP	1.22
	KW	0.91
Speed, RPM	Max.	4000
	Rated	3200
Cont. Stall Rating	Lb-in	30
	Nm	3.39
	Amps	5.5
Peak Stall Rating	Lb-in	90.0
	Nm	10.17
	Amps	16.5
Torque Constant	Lb-in/A	5.42
	Nm/A	0.61
Back EMF	V/Krpm	48
Resistance	Ohms	2.5
Inductance	mH	10.3
Armature Inertia	Lb-in-sec²	0.001
	Kg-m²	0.000113

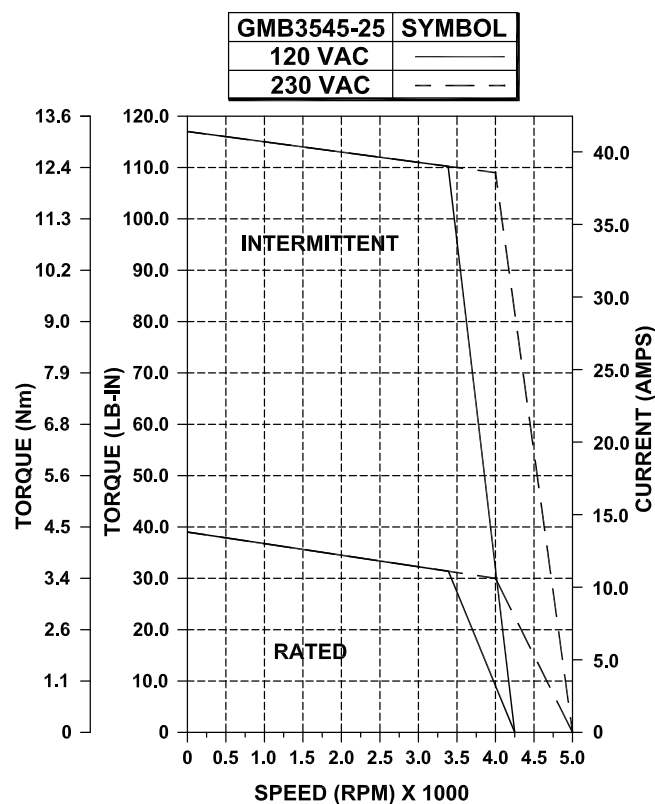
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

GMB3530-73 PERFORMANCE DATA



Power @ Rated Speed	HP	0.76
	KW	0.57
Speed, RPM	Max.	2500
	Rated	2000
Cont. Stall Rating	Lb-in	30
	Nm	3.39
	Amps	3.6
Peak Stall Rating	Lb-in	90.0
	Nm	10.17
	Amps	10.8
Torque Constant	Lb-in/A	8.27
	Nm/A	0.93
Back EMF	V/Krpm	73
Resistance	Ohms	3.1
Inductance	mH	16
Armature Inertia	Lb-in-sec²	0.001
	Kg-m²	0.000113

GMB3545-25 PERFORMANCE DATA

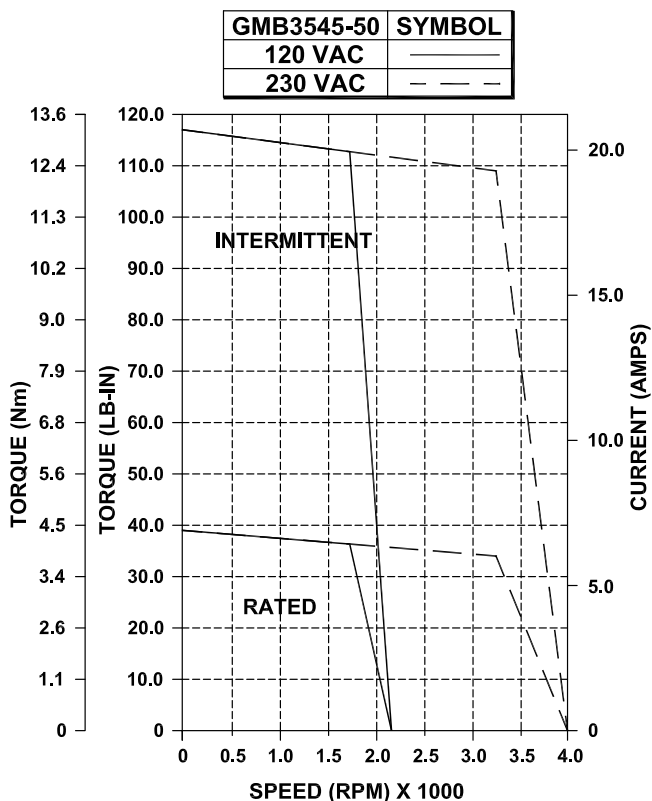


Power @ Rated Speed	HP	1.98
	KW	1.48
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	39
	Nm	4.41
	Amps	13.8
Peak Stall Rating	Lb-in	117.0
	Nm	13.23
	Amps	41.4
Torque Constant	Lb-in/A	2.82
	Nm/A	0.32
Back EMF	V/Krpm	25
Resistance	Ohms	0.5
Inductance	mH	2.1
Armature Inertia	Lb-in-sec²	0.0014
	Kg-m²	0.000158

* Higher speeds may be attainable depending on the application, contact Glentek for more info

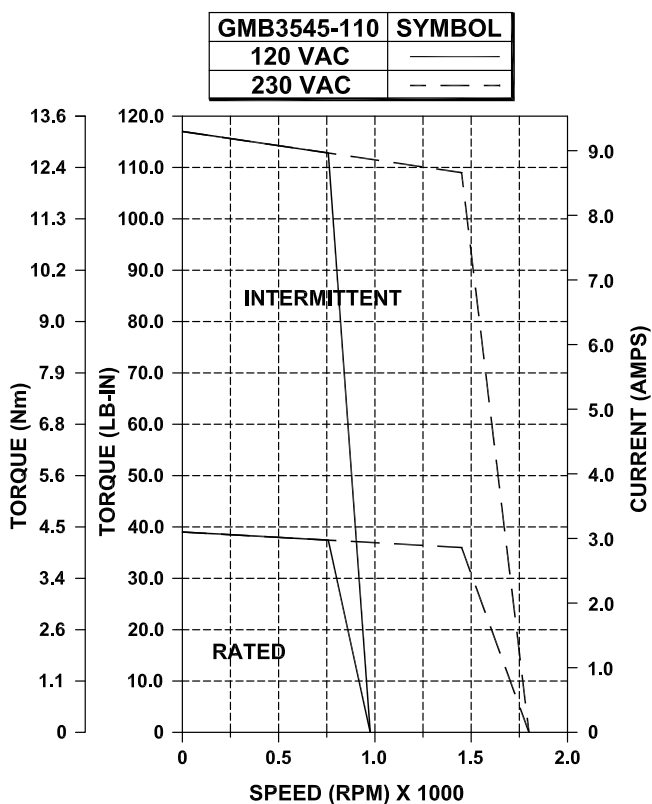
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

GMB3545-50 PERFORMANCE DATA



Power @ Rated Speed	HP	1.58
	KW	1.18
Speed, RPM	Max.	4000
	Rated	3200
Cont. Stall Rating	Lb-in	39
	Nm	4.41
	Amps	6.9
Peak Stall Rating	Lb-in	117.0
	Nm	13.23
	Amps	20.7
Torque Constant	Lb-in/A	5.65
	Nm/A	0.64
Back EMF	V/Krpm	50
Resistance	Ohms	1.1
Inductance	mH	5.6
Armature Inertia	Lb-in-sec²	0.0014
	Kg-m²	0.000158

GMB3545-110 PERFORMANCE DATA



Power @ Rated Speed	HP	0.69
	KW	0.52
Speed, RPM	Max.	1800
	Rated	1400
Cont. Stall Rating	Lb-in	39
	Nm	4.41
	Amps	3.1
Peak Stall Rating	Lb-in	117.0
	Nm	13.23
	Amps	9.3
Torque Constant	Lb-in/A	12.43
	Nm/A	1.40
Back EMF	V/Krpm	110
Resistance	Ohms	6.5
Inductance	mH	33.6
Armature Inertia	Lb-in-sec²	0.0014
	Kg-m²	0.000158

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.

GMB3500 SERIES MODEL NUMBERING

This section explains the model numbering system for Glentek's GMB3500 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 Glentek Sales Engineer to confirm that the model number you have created is correct.



- Magnet Type** blank = NdFeB
- Frame Size** 35 = 3.5" (6 pole) Motor
- Stack Length** 15 = 1.5 inch stack
- Back EMF Constant** 38 = 38 V/Krpm
- Dimensions** E = English
- Brake option** 0 = No brake installed
- Commutation Device** 0 = Brushless Resolver
- Number of Motor poles** 2 = 6 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



Magnet Type	
Leave blank for rare earth magnets	

Frame Size	
35	3.5" Motor

Stack Length			
15	1.5" Stack	45	4.5" Stack
30	3.0" Stack		

Back EMF Constant					
1.5" Stack		3.0" Stack		4.5" Stack	
23	23V/Krpm	24	24V/Krpm	48	48V/Krpm
25	25V/Krpm	37	37V/Krpm	73	73V/Krpm
38	38V/Krpm			50	50V/Krpm
75	75V/Krpm			110	110V/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	
2	6 pole

Flange Type					
0	Standard	1	Special	3	NEMA 34

Shaft Type					
0	Standard	1	Special	3	NEMA 34

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
1	500PPR	5	2000 PPR	9	5000 PPR
2	1000PPR	6	2500 PPR	A	512 PPR
3	1024PPR	7	Special	B	2048 PPR
				C	4096 PPR
				D	3600 PPR
				E	18000 PPR

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