GLENTEK BRUSHLESS SERVO MOTORS
GMB3500 SERIES

Revision: 6/5/24

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 (shaft seal required for IP65 sealing).
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

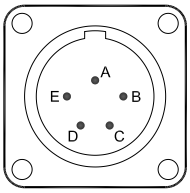
K_T = Torque Constant • K_V = BEMF = V_{RMS} Phase-to-Phase/1000 RPM • R_A = Phase-to-Phase Resistance • L_A = Phase-to-Phase Inductance

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-sec²	Kg-m²
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.

CONNECTORS & PIN-OUT INFORMATION

5-Pin MS connector MS3112E14-5P



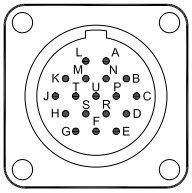
FRONT VIEW

Straight Mating Connector, MS316F14-5S

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

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

18-Pin MS connector MS3112E14-18P

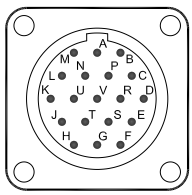


FRONT VIEW

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 -

GMB3500 SERIES BRAKE OPTION

Motor Frame Size	Extension	Torque		Power	Current	Resistance	Inductance
	in. (mm)	Lb-in	Nm	Watts	A	Ω	mH
GMB3500	1.46 (37)	80	9	18	0.8	33	115

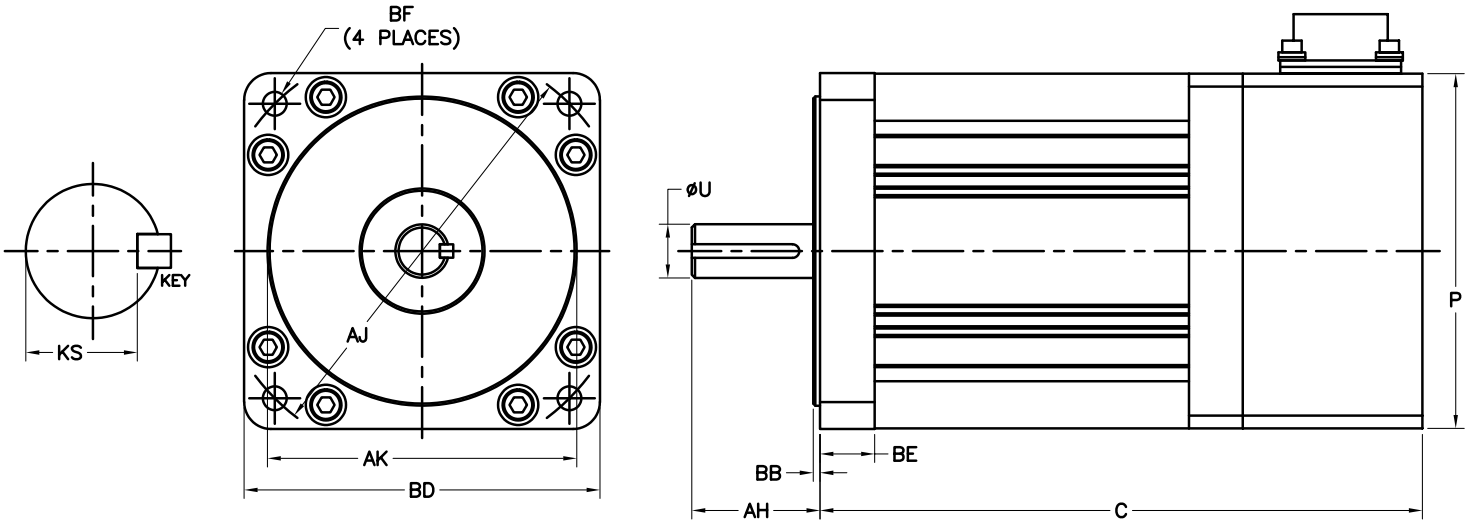
Note:
Brakes are optional. All brakes require 24 VDC input voltage. The values for "Extension" represent the nominal maximum length that the brake will add to the motor. For some models, the extension will be less. Please contact one of our sales engineers for the exact values.

SHAFT LOAD RATINGS

Motor Frame Size	Radial Shaft Load		Axial Shaft Load	
	Lbs	N	Lbs	N
GMB3500	70	310	25	110

Note: This table is for general guidance only. Shaft load ratings are approximations and will vary with shaft diameter, the location of the load on the shaft, speed (RPM), bearings, and more. The values in the table are for a load located 1" (25.4 mm) from the mounting face of the motor and at 3000 RPM.

GMB3500 SERIES DIMENSIONS

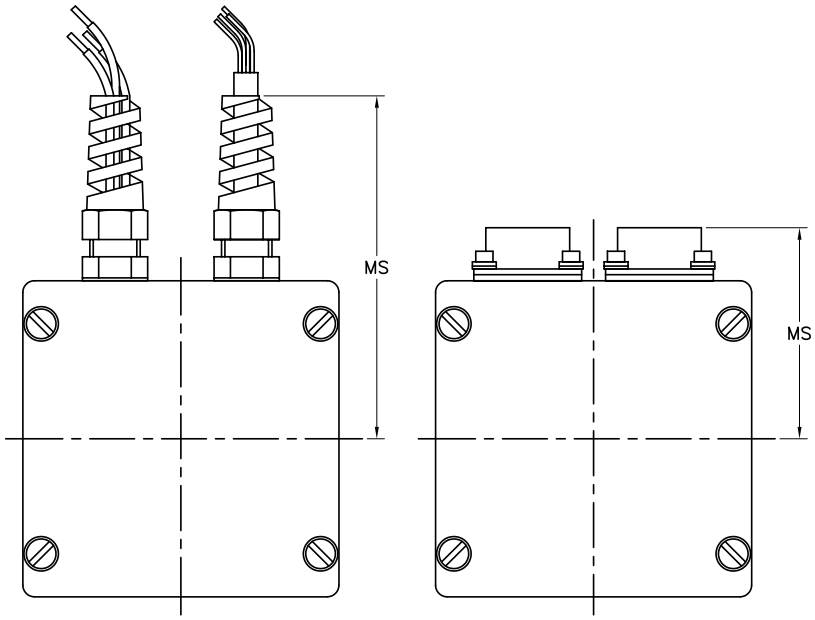


Model Number	Kg (lbs.)	C (max)	P (max)	Shaft				Flange/Face				Mounting Hole		
				AH	U	KEY	KS	AK	BB	BD	BE	AJ	BF Dia.	Tap
GMB3515-XXX-M	**3.8** (8.4)	**183.0** (7.2)	**83.8** (3.30)	**30.00** (1.18)	**14.00** (0.551)	**M5 SQ. X 20**	**10.9 - 11.0**	**80.00** (3.150)	**3.00** (0.12)	**89.00** (3.50)	**11.5** (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)

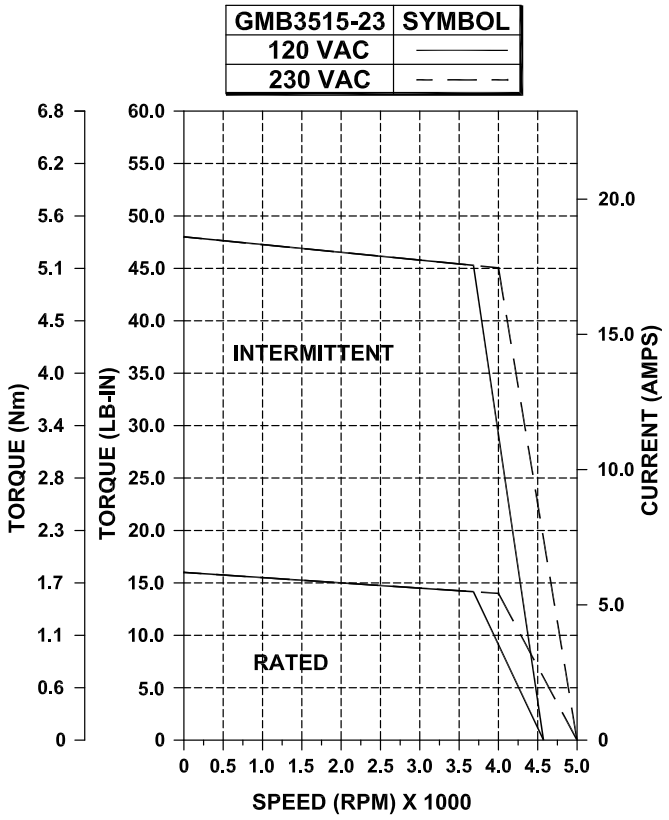
Model Number	Lbs. (Kg)	C (max)	P (max)	Shaft				Flange/Face				Mounting Hole		
				AH	U	KEY	KS	AK	BB	BD	BE	AJ	BF Dia.	Tap
GMB3515-XXX-E	**8.4** (3.8)	**7.20** (182.88)	**3.30** (83.8)	**1.19** (30.2)	**0.4997** (12.69)	**.125 SQ. X 1.00**	**.420 - .430**	**2.877** (73.08)	**0.06** (1.52)	**3.31** (84.07)	**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)

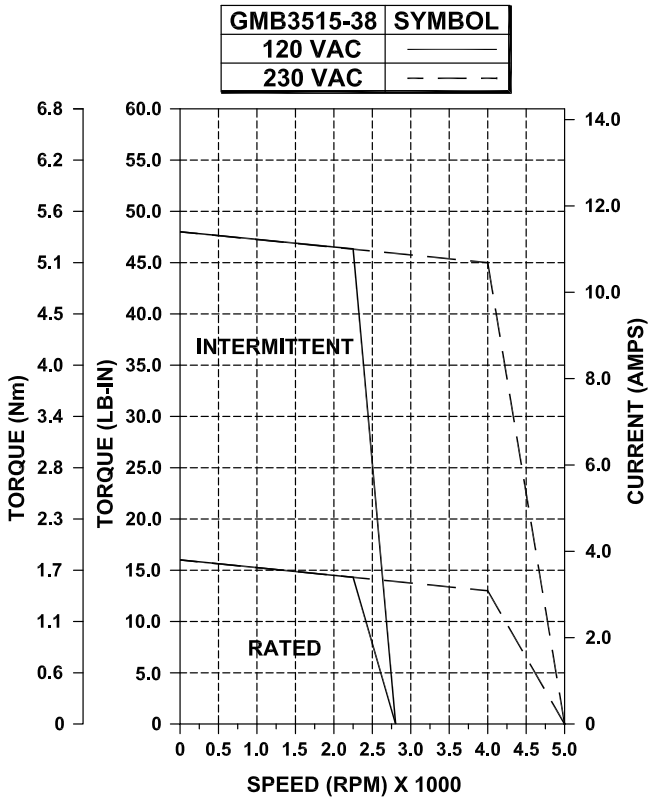
GMB3515-23 PERFORMANCE DATA



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

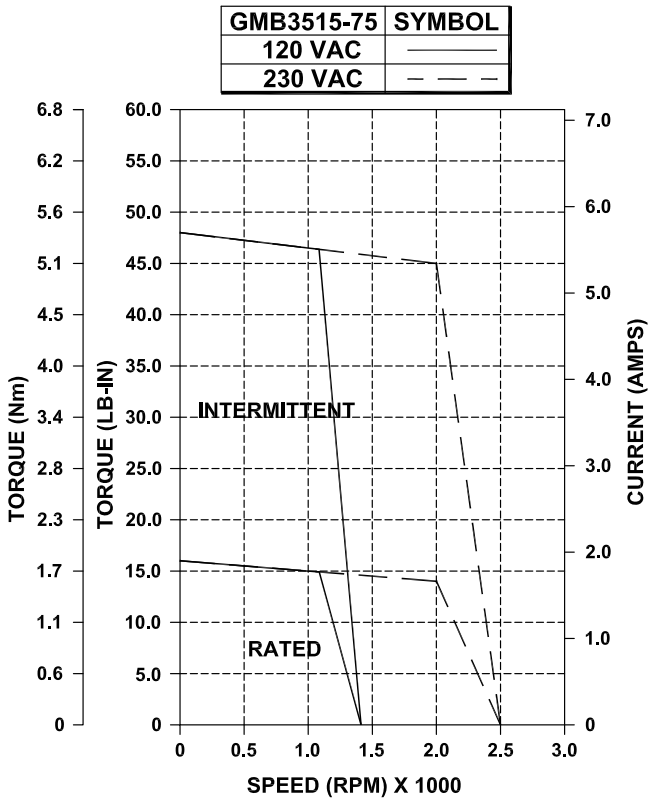
GMB3515-38 PERFORMANCE DATA



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

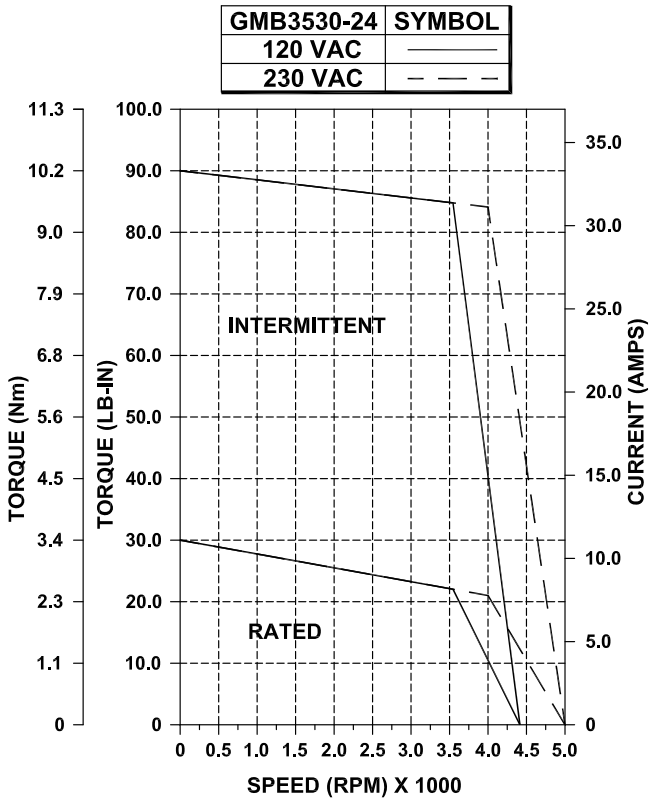
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

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

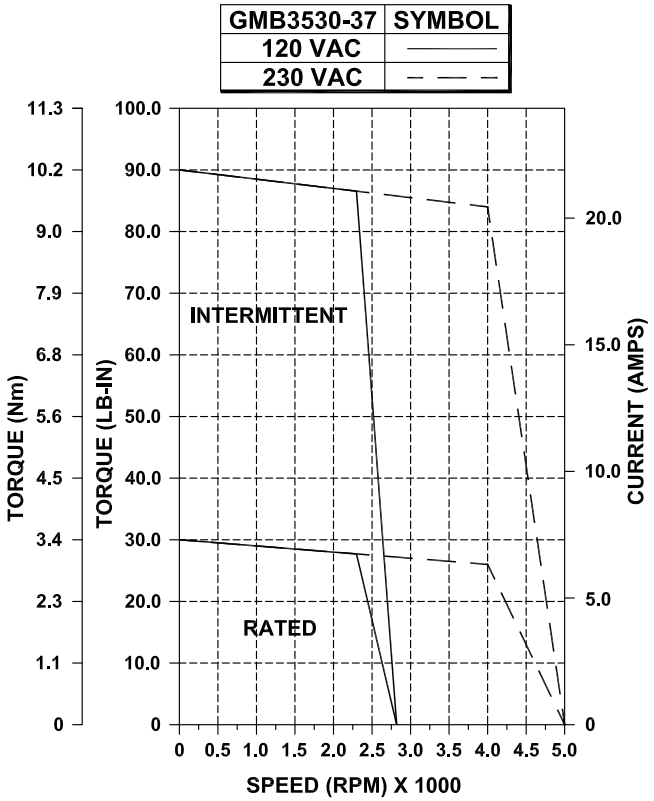


Power @ Rated Speed	**HP**	1.52
	KW	1.14
Speed, RPM	**Max.**	5000*
	Rated	4000*
Cont. Stall Rating	**Lb-in**	30
	Nm	3.39
	Amps	11.1
Peak Stall Rating	**Lb-in**	90.0
	Nm	10.17
	Amps	33.3
Torque Constant	**Lb-in/A**	2.71
	Nm/A	0.31
Back EMF	**V/Krpm**	24
Resistance	**Ohms**	0.5
Inductance	**mH**	2.5
Armature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

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

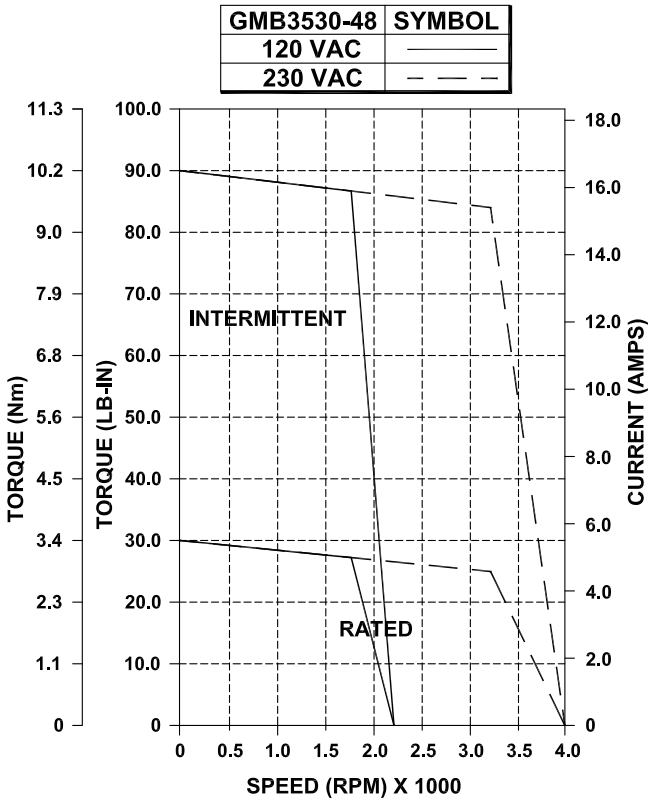
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

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

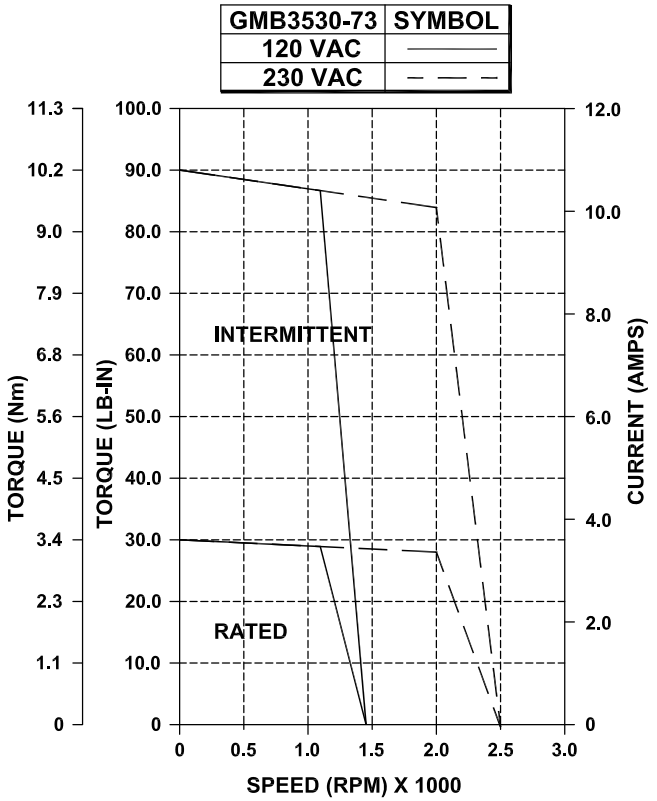
GMB3530-48 PERFORMANCE DATA



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

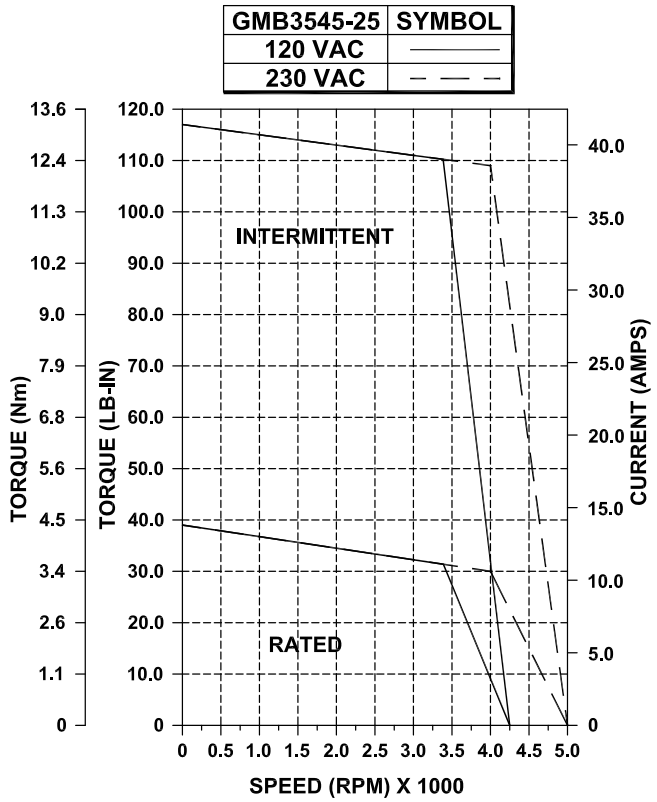
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

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

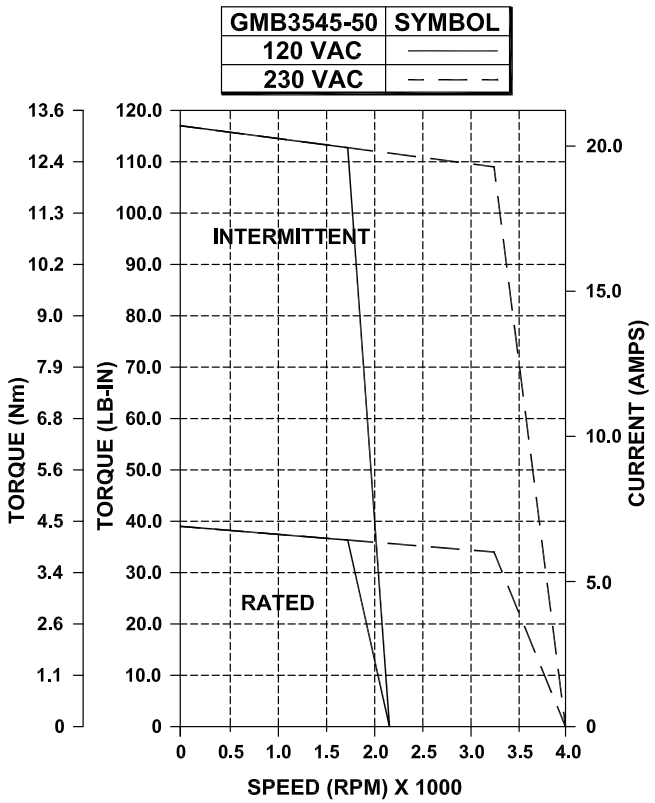


Power @ Rated Speed	**HP**	1.98
	KW	1.48
Speed, RPM	**Max.**	5000*
	Rated	4000*
Cont. Stall Rating	**Lb-in**	39
	Nm	4.41
	Amps	13.8
Peak Stall Rating	**Lb-in**	117.0
	Nm	13.23
	Amps	41.4
Torque Constant	**Lb-in/A**	2.82
	Nm/A	0.32
Back EMF	**V/Krpm**	25
Resistance	**Ohms**	0.5
Inductance	**mH**	2.1
Armature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

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

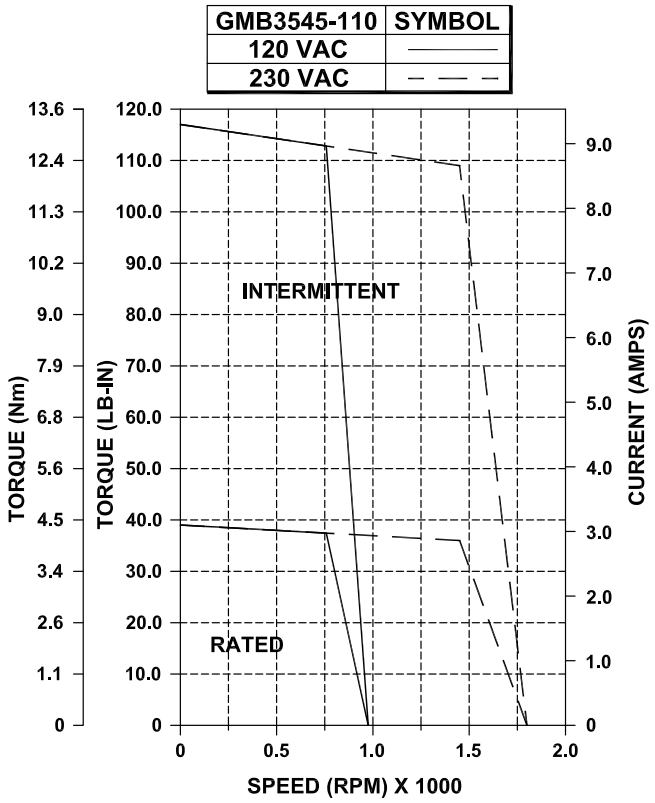
NOTE: All ratings based on a 25°C ambient temperature with the motor face mounted to a 14" x 14" x 3/4" aluminum heatsink.

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 Gletnek Sales Engineer to confirm that the model number you have created is correct.

GMB [ ] 35 15 - 38 - E - 0 0 2 0 0 1 0 0 - [ ]

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

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

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
38	38V/Krpm	37	37V/Krpm	73	73V/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	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