

GLENTEK BRUSHLESS SERVO MOTORS GMB2000 SERIES

Revision: 1/22/2019



Glenetek's GMB2000 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:
2.4 Lb-in (0.27 Nm) to 10.0 Lb-in (1.13 Nm)
- Peak Torque Range:
7.2 Lb-in (0.81 Nm) to 30.0 Lb-in (3.39 Nm)

GMB2000 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 23). 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.

GMB2000 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

GMB2000 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
GMB2005-8	0.12	0.09	5000*	4000*	2.4	0.27	2.7	7.2	0.81	8.1	0.90	0.10	8	6.3	5.8	0.000054	0.000006
GMB2005-17	0.12	0.09	5000*	4000*	2.4	0.27	1.2	7.2	0.81	3.6	1.92	0.22	17	26.0	25	0.000054	0.000006
GMB2010-8	0.25	0.19	5000*	4000*	5	0.56	5.5	15.0	1.68	16.5	0.90	0.10	8	1.8	2.3	0.000074	0.000008
GMB2010-17	0.25	0.19	5000*	4000*	5	0.56	2.6	15.0	1.68	7.8	1.92	0.22	17	8.1	9.3	0.000074	0.000008
GMB2010-28	0.25	0.19	5000*	4000*	5	0.56	1.6	15.0	1.68	4.8	3.16	0.36	28	20.0	23	0.000074	0.000008
GMB2015-8	0.36	0.27	5000*	4000*	7	0.79	7.7	21.0	2.37	23.1	0.90	0.10	8	0.9	1.6	0.000099	0.000011
GMB2015-17	0.36	0.27	5000*	4000*	7	0.79	3.6	21.0	2.37	10.8	1.92	0.22	17	5.3	8.3	0.000099	0.000011
GMB2020-8	0.51	0.38	5000*	4000*	10	1.13	11.1	30.0	3.39	33.3	0.90	0.10	8	0.6	0.9	0.000113	0.000013
GMB2020-17	0.51	0.38	5000*	4000*	10	1.13	5.2	30.0	3.39	15.6	1.92	0.22	17	3.0	4.7	0.000113	0.000013
GMB2020-28	0.51	0.38	5000*	4000*	10	1.13	3.2	30.0	3.39	9.6	3.16	0.36	28	7.8	14	0.000113	0.000013
GMB2030-28	0.66	0.49	5000*	4000*	13	1.50	4.1	40	4.52	12.3	3.16	0.36	28	5.4	10.1	0.000133	0.000015

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.

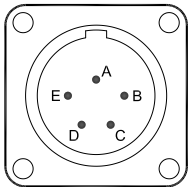
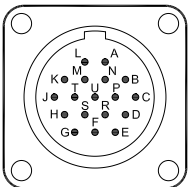
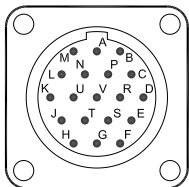
The values for Max and Rated Speed are for motors operated with a 230 VAC power supply.
* Higher speeds may be attainable depending on the application, contact Glentek for more info.

BRAKE OPTION

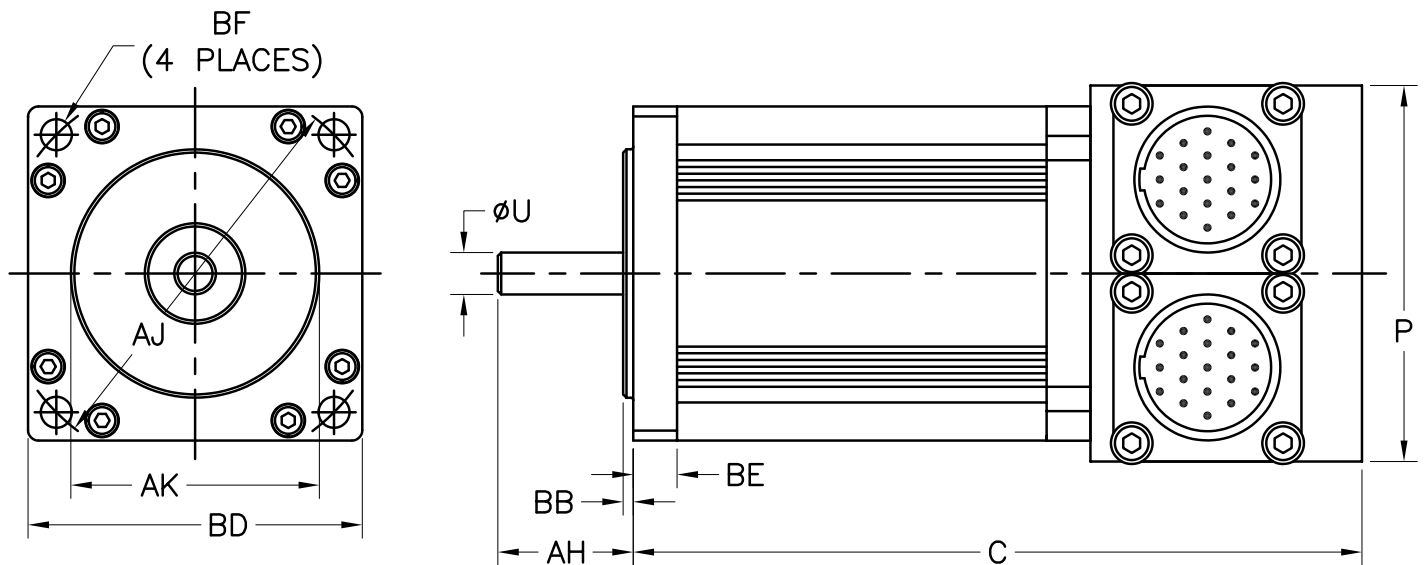
Brake requires 24V DC input voltage. The values for "Extension" represent the nominal maximum length that the brake will add to the motor. For some models, the extension will be less. Please contact one of our sales engineers for the exact values.

Extension	Torque		Power
in. (mm)	Lb-in	Nm	Watts
1.37 (35)	17.7	2.0	11

CONNECTORS & PIN-OUT INFORMATION

5-Pin MS connector MS3112E14-5P		18-Pin MS connector MS3112E14-18P		19-Pin MS connector MS3112E14-19P	
 FRONT VIEW Straight Mating Connector, MS316F14-5S		 FRONT VIEW Straight Mating Connector, MS3116F14-18S		 FRONT VIEW Straight Mating Connector, MS3116F14-19S	
Pin#	Function	Pin#	Function	Pin#	Function
		Resolver		Resolver	
A	Phase R	A	Brake +	A	Temperature Switch
B	Phase S	B	Brake -	B	Temperature Switch
C	Phase T	C	Brake Shield	C	Temperature Switch
D	Case Ground	D	Resolver Shield	C	Resolver Shield
Special mounting options are available. Please contact a Glentek Sales Engineer for detailed information.		E	Reference	D	Encoder Shield
		F	Since Ground	E	Encoder +5VDC
		G	Cosine Ground	E	Encoder Common
		H	Sine	F	Channel A+
		J	N/C	G	Channel A-
		K	N/C	H	Channel B+
		L	N/C	J	Channel B-
		M	N/C	K	Channel Z+
		N	Temperature Switch	L	Channel Z-
		P	N/C	M	Comm. Track S1+
		R	Reference Ground	N	Comm. Track S1-
		S	Cosine	P	Comm. Track S2+
		T	N/C	R	Comm. Track S2-
		U	Temperature Switch	S	Comm. Track S3+
		T	Comm. Track S3-		
		U	Brake +		
		V	Brake -		

GMB2000 SERIES DIMENSIONS

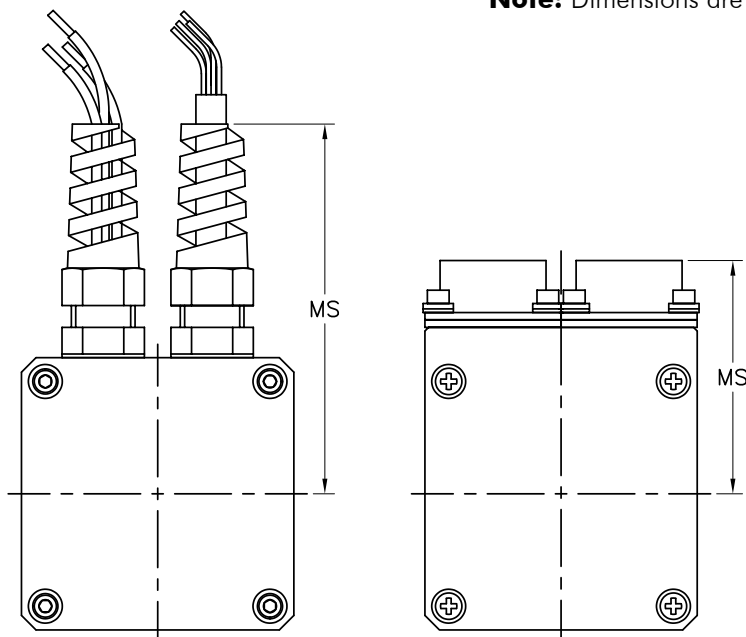


Model Number	Kg (lbs)	C (max.)	P (max.)	Shaft				Flange/Face				Mounting Hole		
				AH	U	KEY	KS	AK	BB	BD	BE	AJ	BF Dia.	Tap
GMB2005-M	0.7 (1.5)	99.6 (3.9)	57.2 (2.25)	30.0 (1.18)	14.00 (0.551)	M5 SQ. x 20	10.9 - 11.0 (1.969)	50.00 (1.969)	2.50 (0.10)	60.0 (2.36)	6.1 (0.24)	70.00 (2.756)	4.50 (0.177)	THRU
GMB2010-M	0.9 (2.0)	110.7 (4.4)	57.2 (2.25)	30.0 (1.18)	14.00 (0.551)	M5 SQ. x 20	10.9 - 11.0 (1.969)	50.00 (1.969)	2.50 (0.10)	60.0 (2.36)	6.1 (0.24)	70.00 (2.756)	4.50 (0.177)	THRU
GMB2015-M	1.1 (2.5)	123.4 (4.9)	57.2 (2.25)	30.0 (1.18)	14.00 (0.551)	M5 SQ. x 20	10.9 - 11.0 (1.969)	50.00 (1.969)	2.50 (0.10)	60.0 (2.36)	6.1 (0.24)	70.00 (2.756)	4.50 (0.177)	THRU
GMB2020-M	1.4 (3.1)	146.0 (5.7)	57.2 (2.25)	30.0 (1.18)	14.00 (0.551)	M5 SQ. x 20	10.9 - 11.0 (1.969)	50.00 (1.969)	2.50 (0.10)	60.0 (2.36)	6.1 (0.24)	70.00 (2.756)	4.50 (0.177)	THRU

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

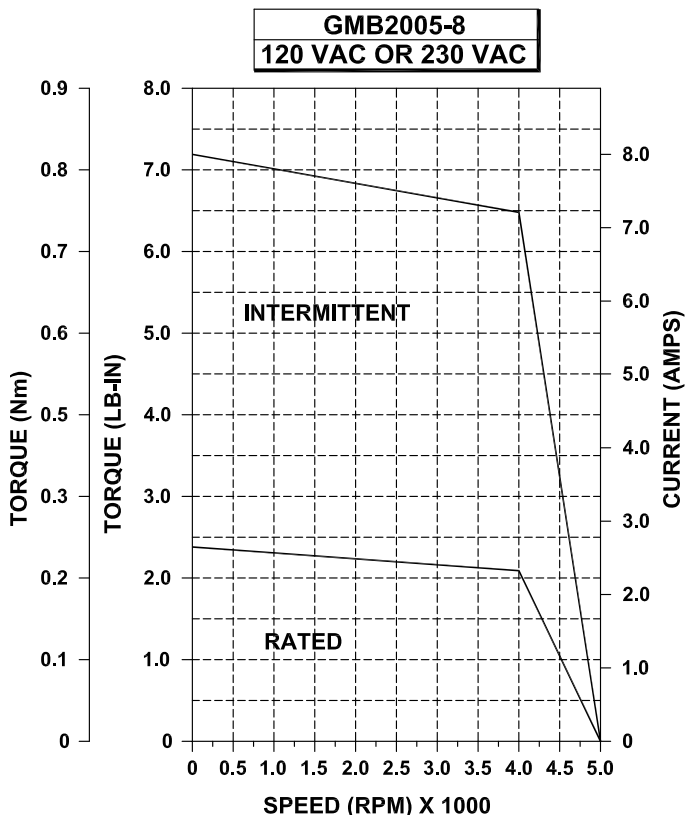
Model Number	Kg (lbs)	C (max.)	P (max.)	Shaft				Flange/Face				Mounting Hole		
				AH	U	KEY	KS	AK	BB	BD	BE	AJ	BF Dia.	Tap
GMB2005-E	1.5 (0.7)	3.92 (99.57)	2.25 (57.2)	0.81 (20.6)	0.3750 (9.53)	-	-	1.500 (38.10)	0.06 (1.52)	2.25 (57.15)	0.26 (6.60)	2.350 (59.69)	0.200 (5.08)	THRU
GMB2010-E	2.0 (0.9)	4.36 (110.74)	2.25 (57.2)	0.81 (20.6)	0.3750 (9.53)	-	-	1.500 (38.10)	0.06 (1.52)	2.25 (57.15)	0.26 (6.60)	2.350 (59.69)	0.200 (5.08)	THRU
GMB2015-E	2.5 (1.1)	4.86 (123.44)	2.25 (57.2)	0.81 (20.6)	0.3750 (9.53)	-	-	1.500 (38.10)	0.06 (1.52)	2.25 (57.15)	0.26 (6.60)	2.350 (59.69)	0.200 (5.08)	THRU
GMB2020-E	3.1 (1.4)	5.75 (146.05)	2.25 (57.2)	0.81 (20.6)	0.3750 (9.53)	-	-	1.500 (38.10)	0.06 (1.52)	2.25 (57.15)	0.26 (6.60)	2.350 (59.69)	0.200 (5.08)	THRU
NEMA 23				0.81 (20.6)	0.2500 (6.35)	-	-	1.500 (38.10)	0.06 (1.52)	2.25 (57.15)	0.30 (7.62)	2.625 (66.68)	0.200 (5.08)	THRU

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



Connectors	MS inches (mm)	MS mm (inches)
5-Pin	1.93 (49.0)	49.0 (1.93)
18-Pin	1.93 (49.0)	49.0 (1.93)
19-Pin	1.93 (49.0)	49.0 (1.93)
Strain Relief	3.06 (78.0)	78.0 (3.06)

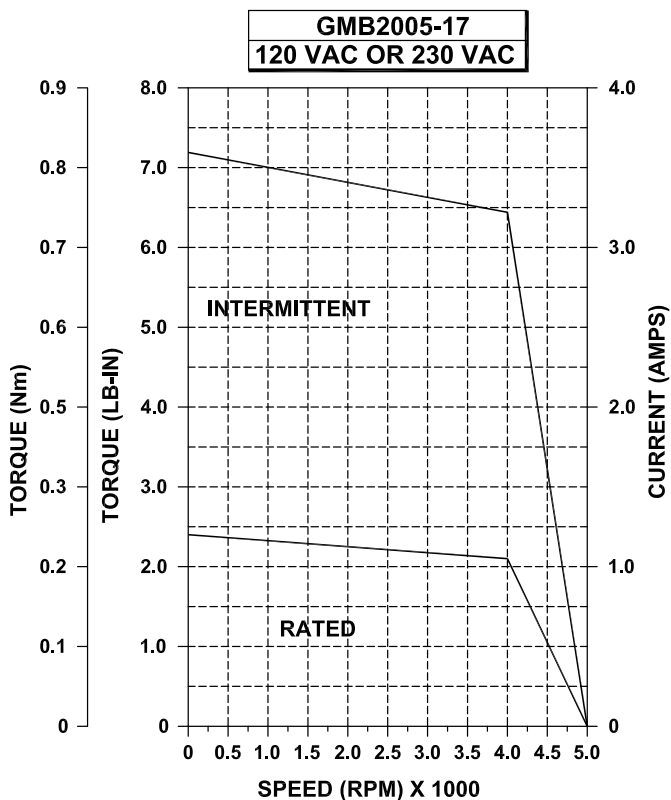
GMB2005-8 PERFORMANCE DATA



Power @ Rated Speed	HP	0.12
	KW	0.09
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	2.4
	Nm	0.27
	Amps	2.7
Peak Stall Rating	Lb-in	7.2
	Nm	0.81
	Amps	8.1
Torque Constant	Lb-in/A	0.90
	Nm/A	0.10
Back EMF	V/Krpm	8
Resistance	Ohms	6.3
Inductance	mH	5.8
Armature Inertia	Lb-in-sec²	0.000054
	Kg-m²	0.000006

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

GMB2005-17 PERFORMANCE DATA

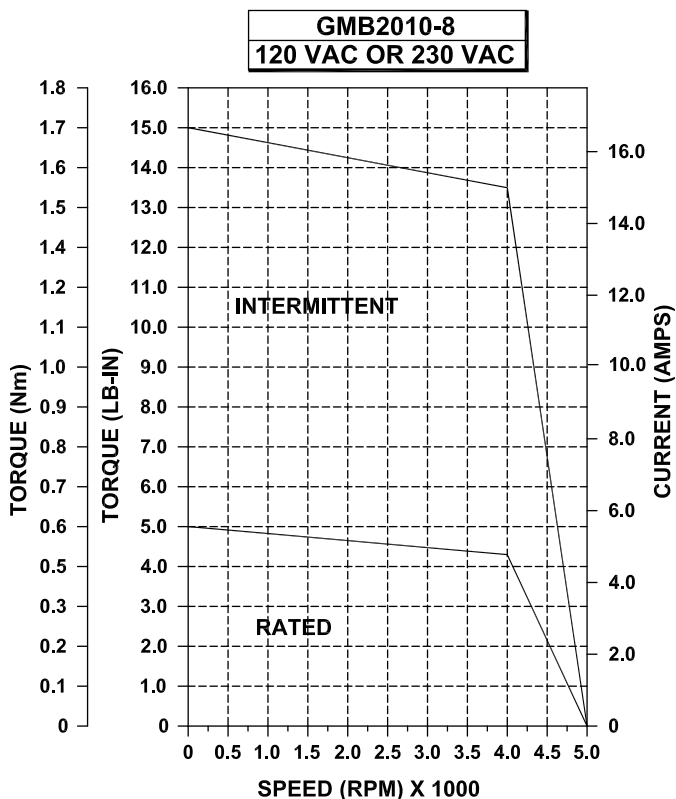


Power @ Rated Speed	HP	0.12
	KW	0.09
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	2.4
	Nm	0.27
	Amps	1.2
Peak Stall Rating	Lb-in	7.2
	Nm	0.81
	Amps	3.6
Torque Constant	Lb-in/A	1.92
	Nm/A	0.22
Back EMF	V/Krpm	17
Resistance	Ohms	26
Inductance	mH	25
Armature Inertia	Lb-in-sec²	0.000054
	Kg-m²	0.000006

* 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.

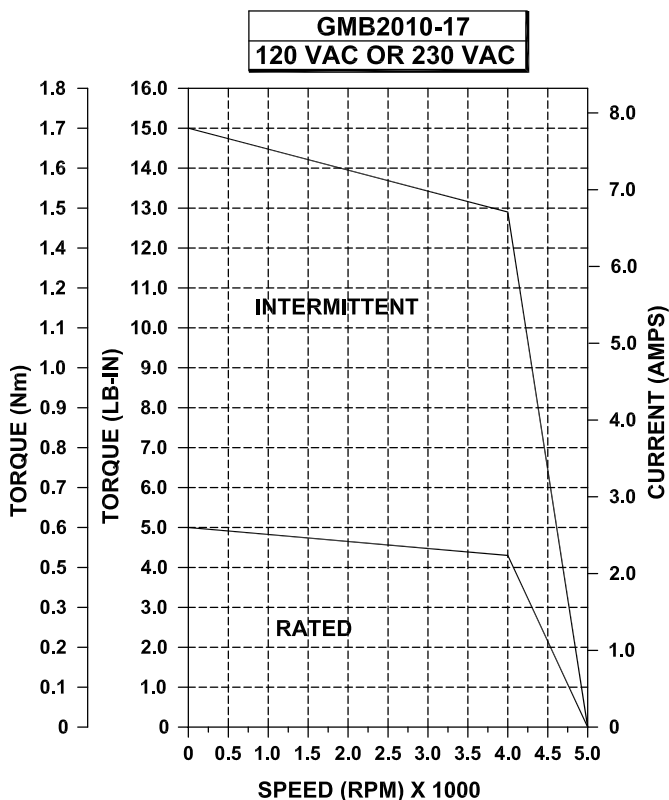
GMB2010-8 PERFORMANCE DATA



Power @ Rated Speed	HP	0.25
	KW	0.19
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	5
	Nm	0.56
	Amps	5.5
Peak Stall Rating	Lb-in	15.0
	Nm	1.68
	Amps	16.5
Torque Constant	Lb-in/A	0.90
	Nm/A	0.10
Back EMF	V/Krpm	8
Resistance	Ohms	1.8
Inductance	mH	2.3
Armature Inertia	Lb-in-sec²	0.000074
	Kg-m²	0.000008

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

GMB2010-17 PERFORMANCE DATA

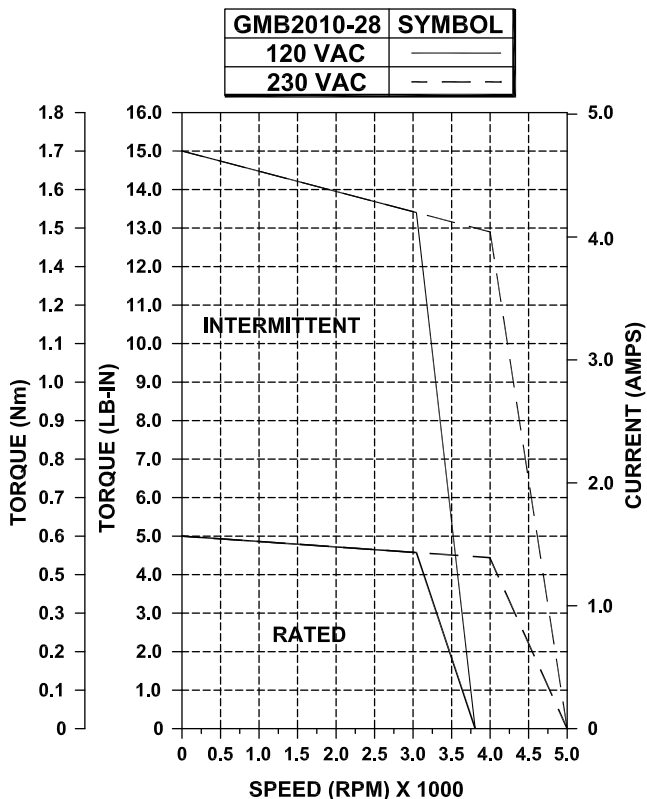


Power @ Rated Speed	HP	0.25
	KW	0.19
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	5
	Nm	0.56
	Amps	2.6
Peak Stall Rating	Lb-in	15.0
	Nm	1.68
	Amps	7.8
Torque Constant	Lb-in/A	1.92
	Nm/A	0.22
Back EMF	V/Krpm	17
Resistance	Ohms	8.1
Inductance	mH	9.3
Armature Inertia	Lb-in-sec²	0.000074
	Kg-m²	0.000008

* 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.

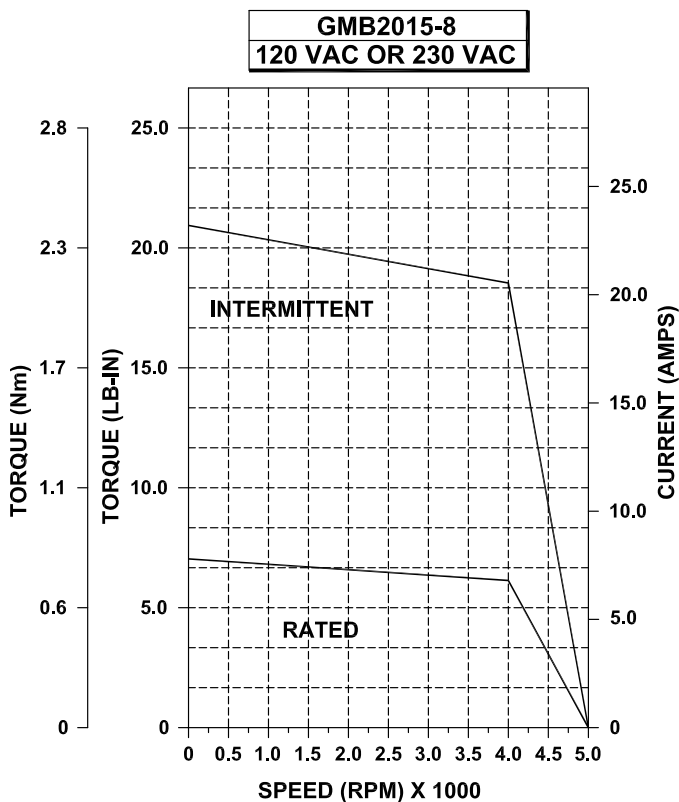
GMB2010-28 PERFORMANCE DATA



Power @ Rated Speed	HP	0.25
	KW	0.19
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	5
	Nm	0.56
	Amps	1.6
Peak Stall Rating	Lb-in	15.0
	Nm	1.68
	Amps	4.8
Torque Constant	Lb-in/A	3.16
	Nm/A	0.36
Back EMF	V/Krpm	28
Resistance	Ohms	20
Inductance	mH	23
Armature Inertia	Lb-in-sec²	0.000074
	Kg-m²	0.000008

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

GMB2015-8 PERFORMANCE DATA

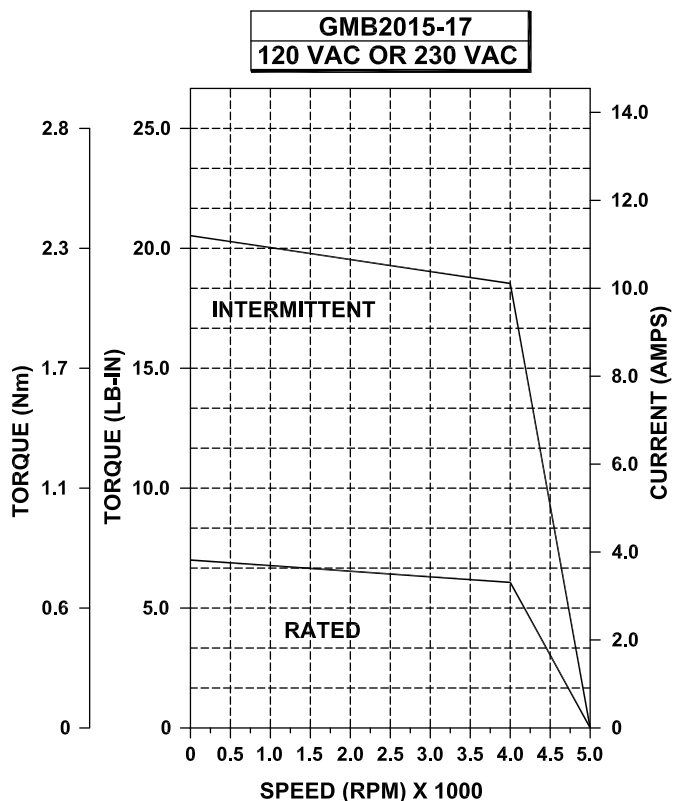


Power @ Rated Speed	HP	0.36
	KW	0.27
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	7
	Nm	0.79
	Amps	7.7
Peak Stall Rating	Lb-in	21.0
	Nm	2.37
	Amps	23.1
Torque Constant	Lb-in/A	0.90
	Nm/A	0.10
Back EMF	V/Krpm	8
Resistance	Ohms	0.9
Inductance	mH	1.6
Armature Inertia	Lb-in-sec²	0.000099
	Kg-m²	0.000011

* 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.

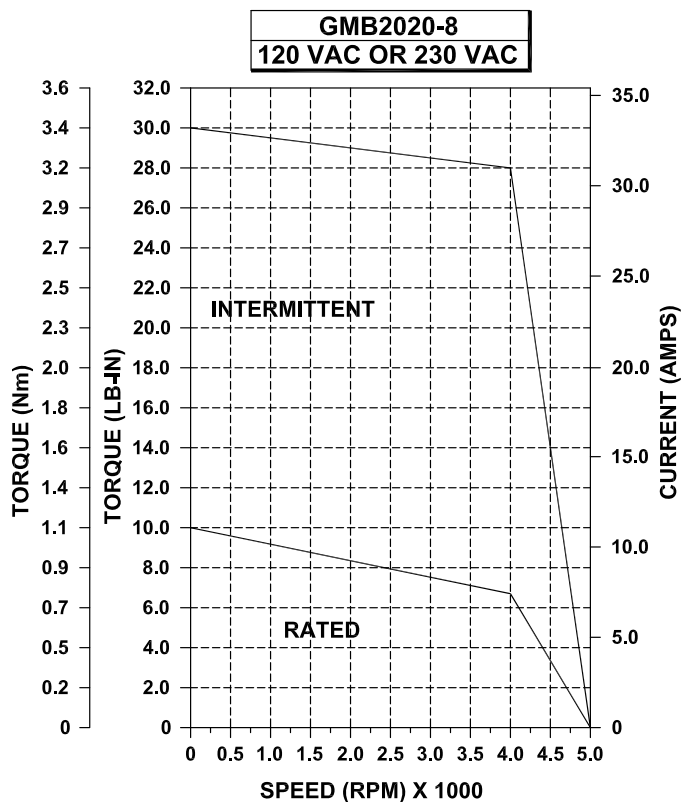
GMB2015-17 PERFORMANCE DATA



Power @ Rated Speed	HP	0.36
	KW	0.27
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	7
	Nm	0.79
	Amps	3.6
Peak Stall Rating	Lb-in	21.0
	Nm	2.37
	Amps	10.8
Torque Constant	Lb-in/A	1.92
	Nm/A	0.22
Back EMF	V/Krpm	17
Resistance	Ohms	5.3
Inductance	mH	8.3
Armature Inertia	Lb-in-sec²	0.000099
	Kg-m²	0.000011

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

GMB2020-8 PERFORMANCE DATA

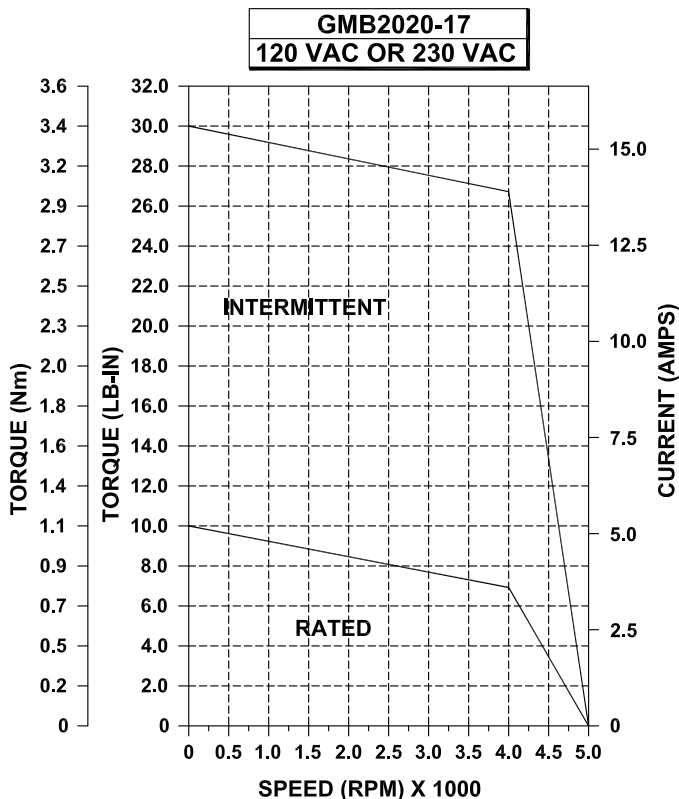


Power @ Rated Speed	HP	0.51
	KW	0.38
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	10
	Nm	1.13
	Amps	11.1
Peak Stall Rating	Lb-in	30.0
	Nm	3.39
	Amps	33.3
Torque Constant	Lb-in/A	0.90
	Nm/A	0.10
Back EMF	V/Krpm	8
Resistance	Ohms	0.6
Inductance	mH	0.9
Armature Inertia	Lb-in-sec²	0.000113
	Kg-m²	0.000013

* 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.

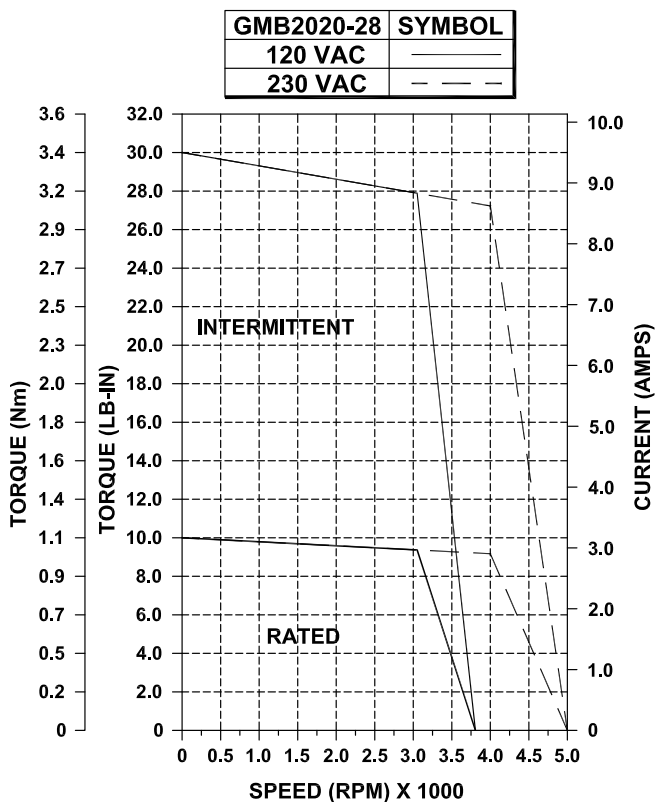
GMB2020-17 PERFORMANCE DATA



Power @ Rated Speed	HP	0.51
	KW	0.38
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	10
	Nm	1.13
	Amps	5.2
Peak Stall Rating	Lb-in	30.0
	Nm	3.39
	Amps	15.6
Torque Constant	Lb-in/A	1.92
	Nm/A	0.22
Back EMF	V/Krpm	17
Resistance	Ohms	3.0
Inductance	mH	4.7
Armature Inertia	Lb-in-sec²	0.000113
	Kg-m²	0.000013

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

GMB2020-28 PERFORMANCE DATA

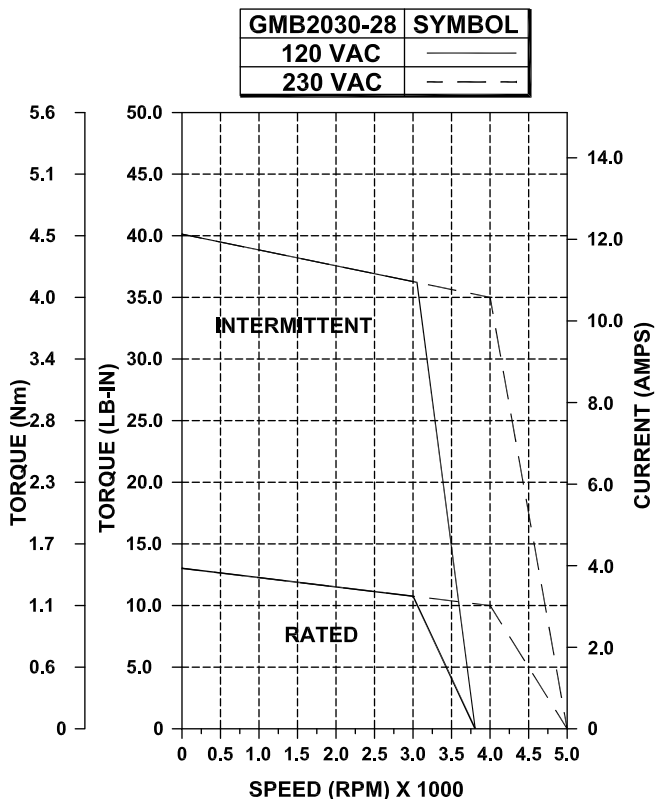


Power @ Rated Speed	HP	0.51
	KW	0.38
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	10
	Nm	1.13
	Amps	3.2
Peak Stall Rating	Lb-in	30.0
	Nm	3.39
	Amps	9.6
Torque Constant	Lb-in/A	3.16
	Nm/A	0.36
Back EMF	V/Krpm	28
Resistance	Ohms	7.8
Inductance	mH	14
Armature Inertia	Lb-in-sec²	0.000113
	Kg-m²	0.000013

* 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.

GMB2030-28 PERFORMANCE DATA



Power @ Rated Speed	HP	0.66
	KW	0.49
Speed, RPM	Max.	5000*
	Rated	4000*
Cont. Stall Rating	Lb-in	13
	Nm	1.50
	Amps	4.1
Peak Stall Rating	Lb-in	40
	Nm	4.52
	Amps	12.3
Torque Constant	Lb-in/A	3.16
	Nm/A	0.36
Back EMF	V/Krpm	28
Resistance	Ohms	5.4
Inductance	mH	10.1
Armature Inertia	Lb-in-sec²	0.000133
	Kg-m²	0.000015

* 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.

GMB2000 SERIES MODEL NUMBERING

This section explains the model numbering system for Glentek's GMB2000 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** 20 = 2.25" (4 pole) Motor
- Stack Length** 15 = 1.5 inch stack
- Back EMF Constant** 8 = 8 V/Krpm
- Dimensions** E = English
- Brake option** 0 = No brake installed
- Commutation Device** 0 = Brushless Resolver
- Number of Motor poles** 1 = 4 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** 5 = 2000PPR
- Factory Assigned Option** leave blank



Magnet Type	
	Leave blank for rare earth magnets

Frame Size	
20	2.25" Motor

Stack Length					
05	0.5" Stack	15	1.5" Stack	30	3.0" Stack
10	1.0" Stack	20	2.0" Stack		

Back EMF Constant									
0.5" Stack		1.0" Stack		1.5" Stack		2.0" Stack		3.0" Stack	
8	8V/Krpm	8	8V/Krpm	8	8V/Krpm	8	8V/Krpm	28	28V/Krpm
17	17V/Krpm	17	17V/Krpm	17	17V/Krpm	17	17V/Krpm		
		28	28V/Krpm			28	28V/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	
1	4 pole

Flange Type			
0	Standard	1	Special
		2	NEMA 23

Shaft Type			
0	Standard	1	Special
		2	NEMA 23

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