

GLENTEK DC BRUSH SERVO MOTORS GM2300 SERIES

Revision: 6/5/24



Glentek's GM2300 series of high performance, permanent magnet DC brush servo motors utilize traditional ferrite magnets, which are ideal for cost sensitive applications. In addition, the higher inertia armatures provide improved motor to load inertia matching for medium to high inertia loads. This helps to reduce the mechanical shaft resonance, which allows higher servo gains with increased stability. These motors incorporate skewed armatures, which provide ultra smooth operation (i.e. low cogging torque) at all speeds.

- Continuous Torque Range:
1.9 Lb-in (0.21 Nm) to 3.1 Lb-in (0.35 Nm)
- Peak Torque Range:
9.5 Lb-in (1.07 Nm) to 15.5 Lb-in (1.75 Nm)

GM2300 SERIES FEATURES

Skewed armature design provides ultra smooth operation (i.e. low cogging torque) at all speeds.
Various electrical windings are available as standard to suit both low and high voltage amplifiers in order to provide optimum speed and torque characteristics. Optional custom electrical windings are available to meet virtually any requirement.
Worldwide standard mounting configurations are available (Square, Round, and NEMA 23). Optional custom mounting configurations are available to meet virtually any requirement.
Industry standard lead termination configurations. (i.e. MS connectors, fluid tight strain relief cable exit, NPT hole with flying leads and terminal boxes)
Optional industry standard feedback devices. (i.e. high performance silver commutator tachometers, and encoders)
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.
RoHS compliant
CE marked.
UL Recognized Component for US and Canada.

GM2300 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

GM2300 SERIES SELECTION TABLE

K_T = Torque Constant • K_V = B_{EMF} = Volts/1000 RPM • L_A = Inductance

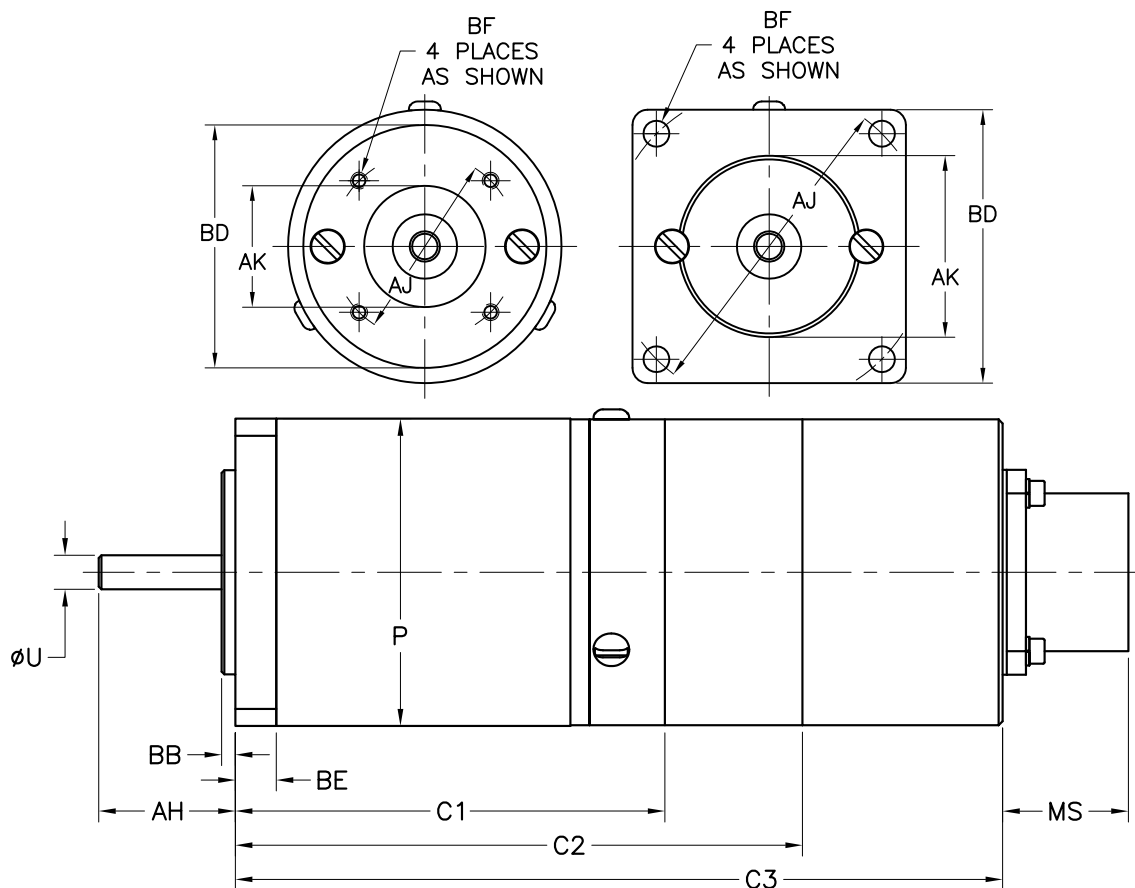
Model Number	Power @ Max Speed		Cont. Stall Rating			Peak Stall Rating			K_T		R_A	L_A	RPM	K_V	Armature Inertia	
	HP	KW	Lb-in	Nm	Amps	Lb-in	Nm	Amps	Lb-in/A	Nm/A	Ω	mH	Max	V/Krpm	Lb-in-sec ²	Kg-m ²
GM2320-7	0.12	0.090	1.9	0.21	3.0	9.5	1.07	15.0	0.63	0.07	1.6	3.3	4000	7.4	0.00023	0.000026
GM2320-16	0.12	0.090	1.9	0.21	1.4	9.5	1.07	7.0	1.34	0.15	11.7	11.0	4000	16	0.00023	0.000026
GM2340-8	0.25	0.186	3.1	0.35	5.0	15.5	1.75	25.0	0.63	0.07	0.9	2.5	5000	7.5	0.00040	0.000045
GM2340-11	0.20	0.149	3.1	0.35	3.3	15.5	1.75	16.5	0.94	0.11	1.0	2.7	4000	11	0.00040	0.000045
GM2340-15	0.20	0.149	3.1	0.35	2.5	15.5	1.75	12.5	1.25	0.14	2.8	5.0	4000	15	0.00040	0.000045

NOTE: All ratings based on a 40°C ambient temperature with the motor face mounted to a 12" x 12" x 1/2" aluminum heatsink.

GM2300 SERIES DIMENSIONS

C1 = Bare Motor, C2 = Motor with Tachometer or Encoder, C3 = Motor with Tachometer and Encoder.

Note: Dimensions are in inches (mm)



Model Number	Lbs (kg)	C1	C2	C3	P
GM2320	3.0 (1.4)	3.69 (93.73)	5.68 (144.3)	7.04 (178.82)	2.25 (57.15)
GM2340	4.0 (1.8)	5.30 (134.62)	7.29 (185.2)	8.65 (219.71)	2.25 (57.15)

Connectors	6-Pin	14-Pin	16-Pin
MS	.723 (18.36)	.920 (23.37)	1.013 (25.73)

Flange Type	Shaft		Flange/Face				Mounting Hole		
	AH	U (MAX)	AJ	AK	BB	BD	BE (MAX)	BF Dia.	Tap
Round	1.00 (25.40)	0.2500 (6.350)	1.531 (38.89)	1.00 (25.40)	0.10 (2.54)	2.00 (50.80)	0.30 (7.62)	-	6-32 ∇.38
Square Flange	1.00 (25.40)	0.2500 (6.350)	2.625 (66.68)	1.500 (38.10)	0.10 (2.54)	2.25 (57.15)	0.30 (7.62)	0.213 (5.41)	THRU
NEMA 23	0.81 (20.57)	0.2500 (6.350)	2.625 (66.68)	1.500 (38.10)	0.10 (2.54)	2.25 (57.15)	0.30 (7.62)	0.213 (5.41)	THRU

GM2300 SERIES BRAKE OPTION

Motor Frame Size	Extension	Torque		Power	Current	Resistance	Inductance
	in. (mm)	Lb-in	Nm	Watts	A	Ω	mH
GM2300	1.70 (43)	18	2.0	11	0.5	52	95

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.

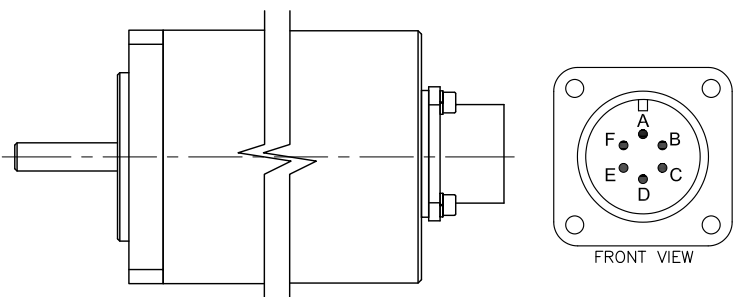
SHAFT LOAD RATINGS

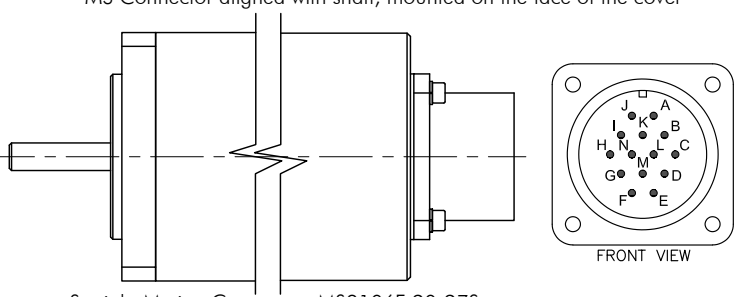
Motor Frame Size	Radial Shaft Load		Axial Shaft Load	
	Lbs	N	Lbs	N
GM2300	30	130	15	65

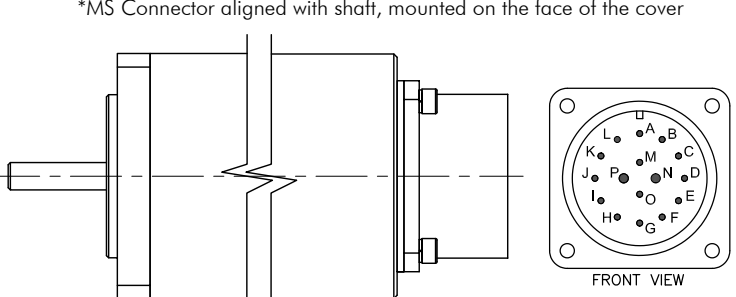
Note: This table is for general guidance only. Shaft load ratings are approximations and will vary with shaft diameter, the location of the load on the shaft, speed (RPM), bearings, and more. The values in the table are for a load located 1" (25.4 mm) from the mounting face of the motor and at 3000 RPM.

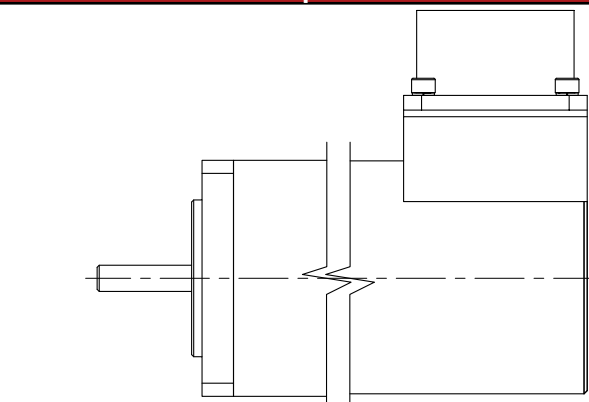
CONNECTORS & PIN-OUT INFORMATION

With a positive voltage applied to the red motor lead (Motor +) with respect to the black motor lead (Motor -), the motor drive shaft will turn in the clockwise direction as viewed from the shaft end.

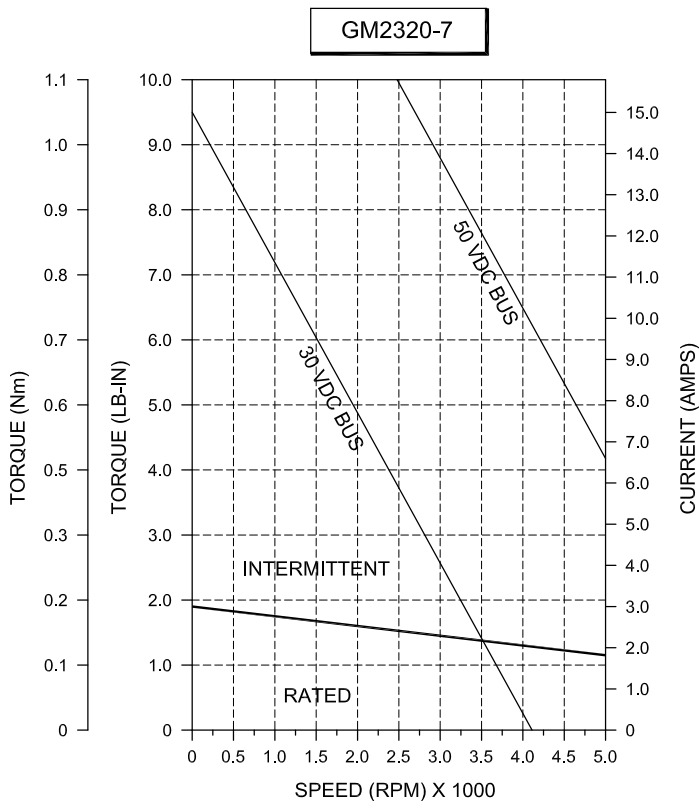
GM 2300 Series Standard 6-pin MS Connector Location	MS3102R-14-6P	Function
<p>*MS Connector aligned with shaft, mounted on the face of the cover</p>  <p>•Straight Mating Connector: MS3106F-20-27S •90° Mating Connector: MS3108E-20-27S</p>	6-Pin A B C D E (W/O Brake) E (W/ Brake) F	Motor + Motor - Tachometer + Tachometer - Tachometer Cable Shield Brake + Brake -

GM 2300 Series Standard 14-pin MS Connector Location	MS3102R-20-27P	Encoder Feedback	Resolver Feedback
<p>*MS Connector aligned with shaft, mounted on the face of the cover</p>  <p>•Straight Mating Connector: MS3106F-20-27S •90° Mating Connector: MS3108E-20-27S</p>	14-Pin A B C D E F G H I J K L M N	Function Channel A+ Channel A- Channel B+ Channel B- Channel Z+ Channel Z- +5 VDC Common Cable Shield Tachometer + Tachometer - Tachometer Cable Shield	Function Sine Sig (S1) Sine Com (S2) Cosine Sig (S3) Cosine Com (S4) Reference Sig (R1) Reference Com (R2) N/C N/C N/C N/C

GM 2300 Series Standard 16-pin MS Connector Location	MS3102R-24-07P	Encoder Feedback	Resolver Feedback
<p>*MS Connector aligned with shaft, mounted on the face of the cover</p>  <p>•Straight Mating Connector: MS3106F-20-27S •90° Mating Connector: MS3108E-20-27S</p>	16-Pin A B C D E F G H I J K L M N O P	Function Channel A+ Channel A- Channel B+ Channel B- Channel Z+ Channel Z- +5 VDC Common Cable Shield Tachometer + Tachometer - Tachometer Cable Shield Brake + Motor + Brake - Motor -	Function Sine Sig (S1) Sine Com (S2) Cosine Sig (S3) Cosine Com (S4) Reference Sig (R1) Reference Com (R2) N/C N/C N/C N/C

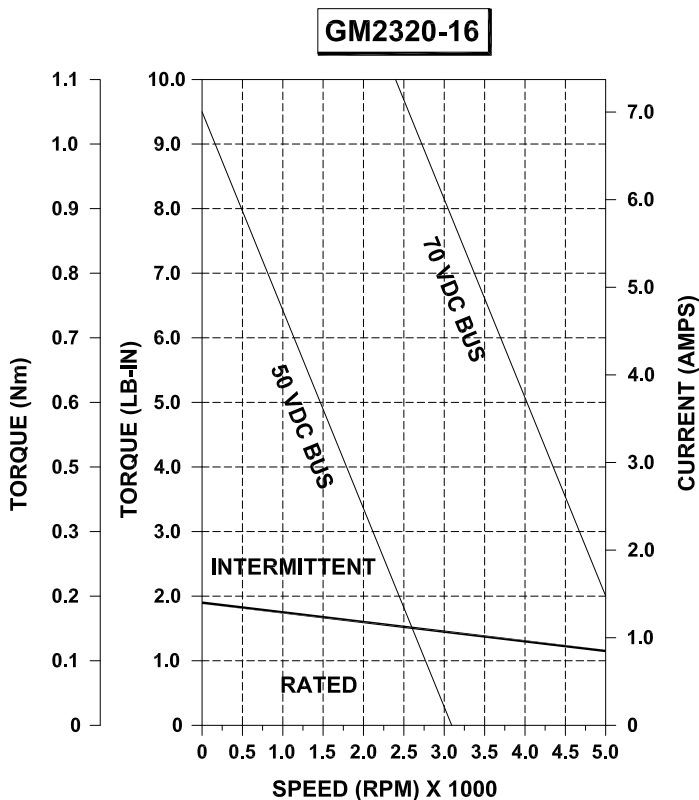
GM 2300 Series Special MS Connector Location	
	<p>Glentek's GM2300 Series offer 90 degree mounting option please contact a Glentek Sales Engineer for detailed information.</p>

GM2320-7 PERFORMANCE DATA



Power @ Max Speed	HP	0.12
	KW	.090
Cont. Stall Rating	Lb-in	1.9
	Nm	0.21
	Amps	3.0
Peak Stall Rating	Lb-in	9.5
	Nm	1.07
	Amps	15.0
Torque Constant	Lb-in/A	0.63
	Nm/A	0.07
Resistance	Ohms	1.6
Inductance	mH	3.3
Maximum Speed	RPM	4000
Back EMF	V/Krpm	7.4
Armature Inertia	Lb-in-sec²	0.00023
	Kg-m²	0.000026

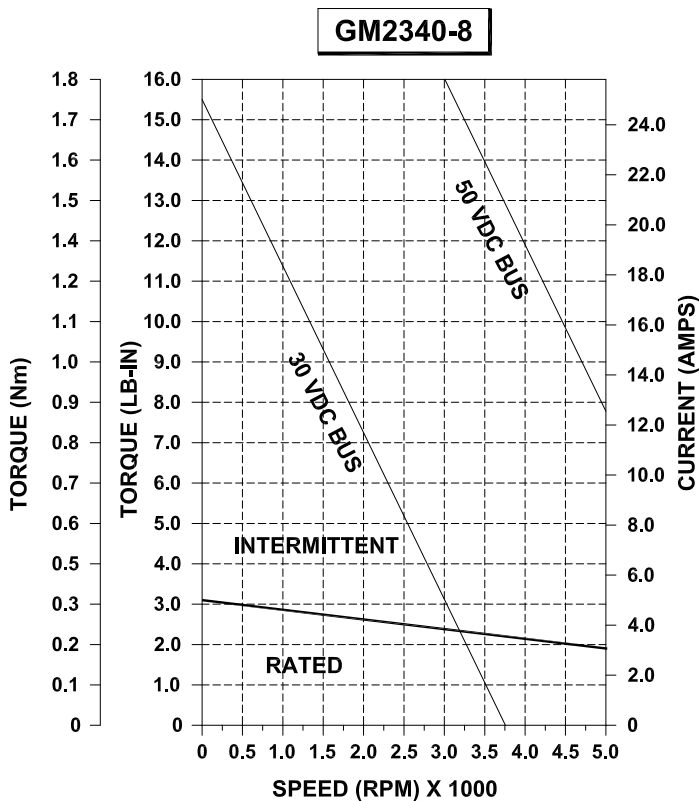
GM2320-16 PERFORMANCE DATA



Power @ Max Speed	HP	0.12
	KW	.090
Cont. Stall Rating	Lb-in	1.9
	Nm	0.21
	Amps	1.4
Peak Stall Rating	Lb-in	9.5
	Nm	1.07
	Amps	7.0
Torque Constant	Lb-in/A	1.34
	Nm/A	0.15
Resistance	Ohms	11.7
Inductance	mH	11.0
Maximum Speed	RPM	4000
Back EMF	V/Krpm	16
Armature Inertia	Lb-in-sec²	0.00023
	Kg-m²	0.000026

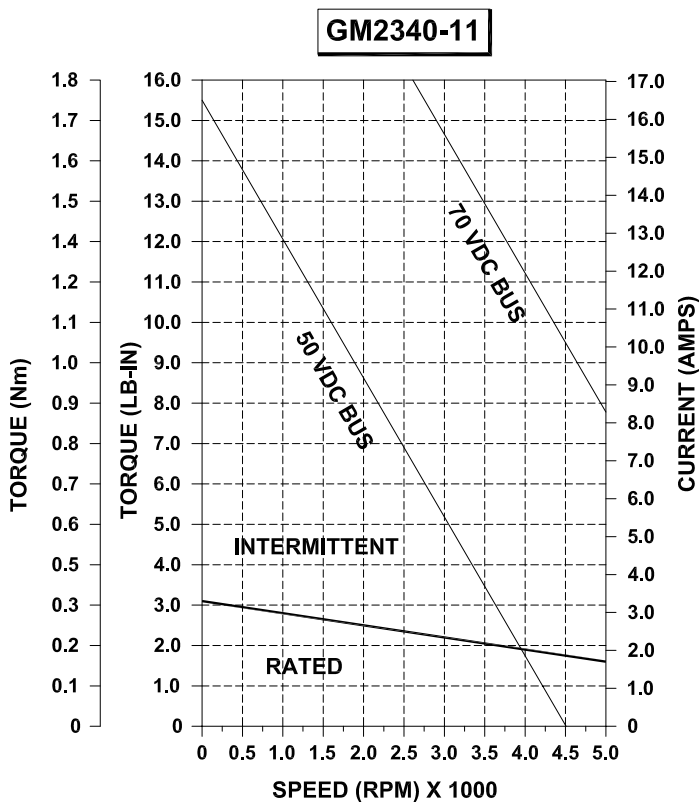
NOTE: All ratings based on a 40°C ambient temperature with the motor face mounted to a 12" x 12" x 1/2" aluminum heatsink.

GM2340-8 PERFORMANCE DATA



Power @ Max Speed	HP	0.25
	KW	0.186
Cont. Stall Rating	Lb-in	3.1
	Nm	0.35
	Amps	5.0
Peak Stall Rating	Lb-in	15.5
	Nm	1.75
	Amps	25.0
Torque Constant	Lb-in/A	0.63
	Nm/A	0.07
Resistance	Ohms	0.9
Inductance	mH	2.5
Maximum Speed	RPM	5000
Back EMF	V/Krpm	7.5
Armature Inertia	Lb-in-sec²	0.00040
	Kg-m²	0.000045

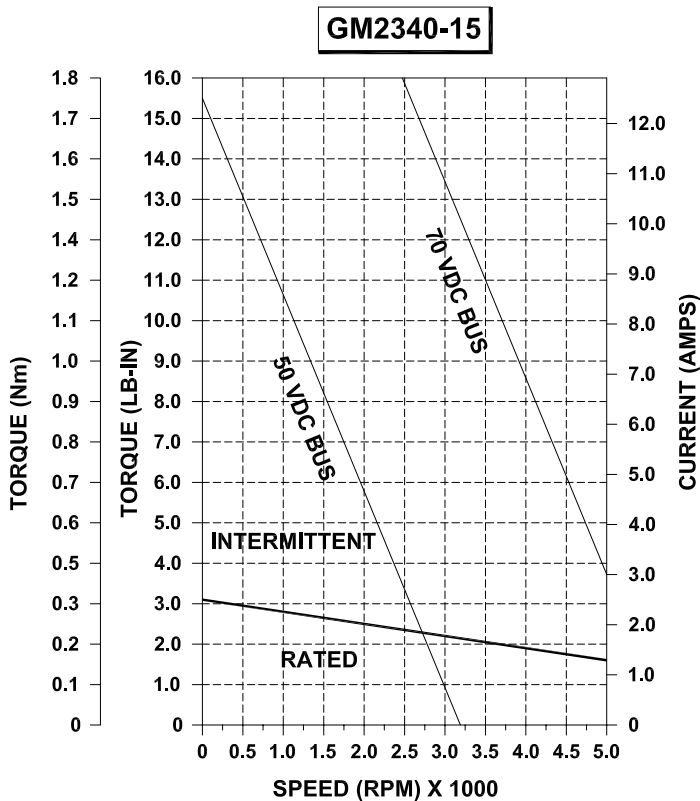
GM2340-11 PERFORMANCE DATA



Power @ Max Speed	HP	0.20
	KW	0.149
Cont. Stall Rating	Lb-in	3.1
	Nm	0.35
	Amps	3.3V
Peak Stall Rating	Lb-in	15.5
	Nm	1.75
	Amps	16.5
Torque Constant	Lb-in/A	0.94
	Nm/A	0.11
Resistance	Ohms	1.0
Inductance	mH	2.7
Maximum Speed	RPM	4000
Back EMF	V/Krpm	11
Armature Inertia	Lb-in-sec²	0.00040
	Kg-m²	0.000045

NOTE: All ratings based on a 40°C ambient temperature with the motor face mounted to a 12" x 12" x 1/2" aluminum heatsink.

GM2340-15 PERFORMANCE DATA



Power @ Max Speed	HP	0.20
	KW	0.149
Cont. Stall Rating	Lb-in	3.1
	Nm	0.35
	Amps	2.5
Peak Stall Rating	Lb-in	15.5
	Nm	1.75
	Amps	12.5
Torque Constant	Lb-in/A	1.25
	Nm/A	0.14
Resistance	Ohms	2.8
Inductance	mH	5.0
Maximum Speed	RPM	4000
Back EMF	V/Krpm	15
Armature Inertia	Lb-in-sec²	0.00040
	Kg-m²	0.000045

NOTE: All ratings based on a 40°C ambient temperature with the motor face mounted to a 12" x 12" x 1/2" aluminum heatsink.

GM2300 SERIES MODEL NUMBERING

This section explains the model numbering system for Glentek's GM2300 Series DC Brush 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.



- Frame Size 23** = 2.3" Motor
- Stack Length 20** = 2.0 inch stack
- Back EMF Constant 7** = 7 V/Krpm
- Brake Option 0** = No brake installed
- Tachometer Option 2** = 7 VDC tachometer
- Encoder Option 8** = 2500 PPR
- Brushless Resolver Option 0** = No resolver installed
- Flange Type 1** = Standard Square
- Lead Termination 5** = Male MS connector, MS3102R-24-07P (16-pin style)
- Wiring Diagram 0** = Glentek Standard
- Sealing Option 0** = No shaft seal
- Factory Assigned Option** Leave blank



Frame Size			
23	2.3" Motor		
Stack Length			
20	2.0 inch Stack	40	4.0 inch stack
Back EMF Constant			
2.0" only		4.0" only	
7	7 V/Krpm	8	8 V/Krpm
16	16 V/Krpm	11	11 V/Krpm
-	-	15	15 V/Krpm
For custom Back EMF, Please Contact Glentek			

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

Tachometer Option			
0	No tachometer installed	2	7 VDC tachometer
1	3 VDC tachometer	3	9.5 VDC tachometer
4	Special		
-	-		

Encoder Option			
0	No encoder installed	4	1000 PPR
2	500 PPR	6	2000 PPR
8	2500 PPR		
9	Special		

Brushless Resolver Option			
0	No resolver installed		
1	Brushless resolver		2
-	Special		

Flange Type			
0	Standard Round		6
1	Standard Square		7
-			Special
-			NEMA 23

Lead Termination			
0	Flying leads exiting through a rubber grommet		
1	.5" NPT with flying leads		4
2	.75" NPT with flying leads		5
3	6-Pin, Male MS connector		6
-			8
-	Liquid tight strain relief with flying leads		
-	Special		

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

Sealing Option			
0	No shaft seal		
1	Shaft Seal		2
-	Special		

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