

# GLENTEK DC BRUSH SERVO MOTORS GM6000 SERIES

Revision: 2/24/26



Glentek's GM6000 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:  
75.0 Lb-in (8.47 Nm) to 113 Lb-in (12.77 Nm)
- Peak Torque Range:  
375.0 Lb-in (42.35 Nm) to 565.0 Lb-in (63.85 Nm)

## GM6000 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 56C).  
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.

Optional IP65 sealing is available

RoHS compliant.

CE marked.

UL Recognized Component for US and Canada.

## GM6000 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

## GM6000 SERIES SELECTION TABLE

$K_T$  = Torque Constant •  $K_V$  = BEMF = 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	$\Omega$	mH	Max	V/Krpm	Lb-in-sec <sup>2</sup>	Kg-m <sup>2</sup>
<b>GM6060-39</b>	3.57	2.663	75	8.47	22.8	375.0	42.35	114.0	3.29	0.37	0.3	0.95	3000	39	0.05300	0.005989
<b>GM6060-50</b>	2.98	2.223	75	8.47	17.8	375.0	42.35	89.0	4.22	0.48	0.8	1.00	2500	50	0.05300	0.005989
<b>GM6060-70</b>	2.14	1.596	75	8.47	12.5	375.0	42.35	62.4	5.91	0.67	1.2	0.95	1800	70	0.05300	0.005989
<b>GM6060-96</b>	1.79	1.335	75	8.47	9.3	375.0	42.35	46.5	8.11	0.92	1.4	0.95	1500	96	0.05300	0.005989
<b>GM6090-50</b>	4.46	3.327	113	12.77	26.7	565.0	63.85	133.5	4.22	0.48	0.4	1.00	2500	50	0.08000	0.009040

**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.

## GM6000 SERIES BRAKE OPTION

Motor Frame Size	Extension	Torque		Power	Current	Resistance	Inductance
	in. (mm)	Lb-in	Nm	Watts	A	$\Omega$	mH
<b>GM6000</b>	2.63 (67)	160	18	24	1.0	24	100

**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.

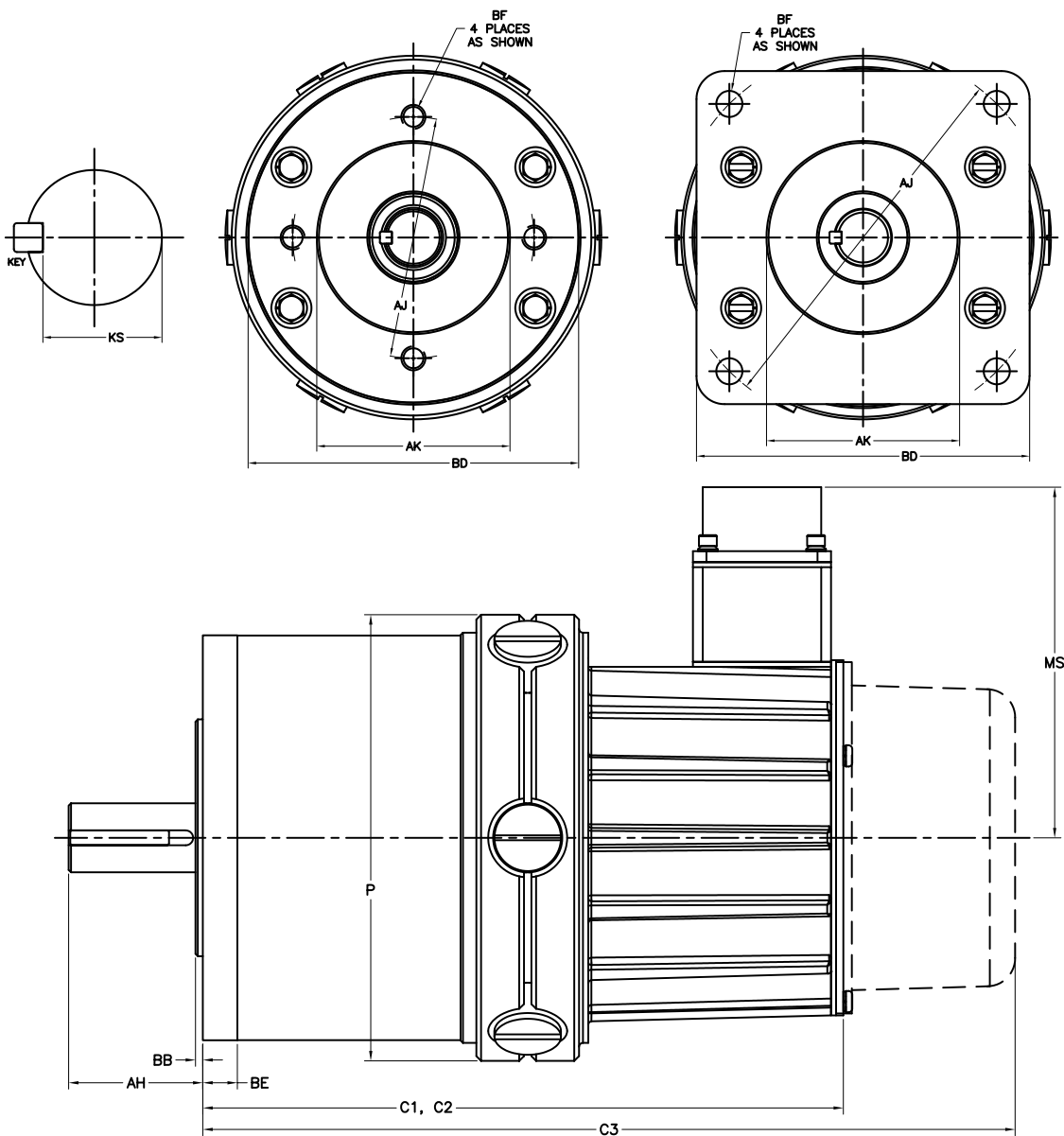
## SHAFT LOAD RATINGS

Motor Frame Size	Radial Shaft Load		Axial Shaft Load	
	Lbs	N	Lbs	N
<b>GM6000</b>	150	670	50	220

**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.

## GM6000 SERIES DIMENSIONS

C1 = Bare Motor, C2 = Motor with Tachometer or Encoder, C3 = Motor with Tachometer and Encoder.  
 Note: Dimensions are in inches (mm)



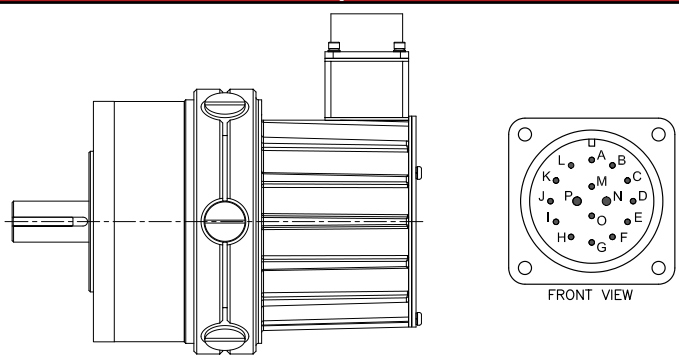
Model Number	Lbs (kg)	C1		C2		C3		P
		RND	SQR	RND	SQR	RND	SQR	
<b>GM6060</b>	<b>41.0</b> (18.6)	<b>13.92</b> (353.57)	<b>13.92</b> (353.57)	<b>17.10</b> (434.34)	<b>17.10</b> (434.34)	<b>17.10</b> (434.34)	<b>17.10</b> (434.34)	<b>5.65</b> (143.51)
<b>GM6090</b>	<b>56.0</b> (25.5)	<b>16.92</b> (429.77)	<b>16.92</b> (429.77)	<b>20.10</b> (510.54)	<b>20.10</b> (510.54)	<b>20.10</b> (510.54)	<b>20.10</b> (510.54)	<b>5.65</b> (143.51)

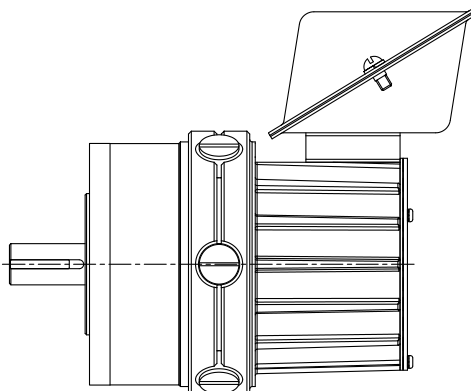
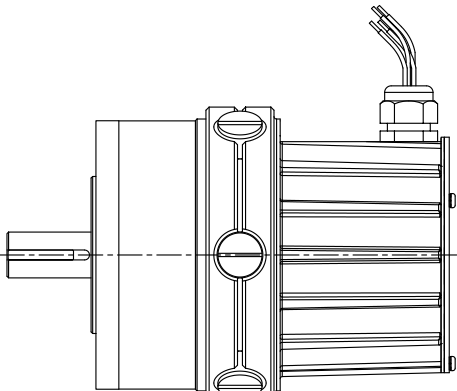
Connectors	Liquid Tight	Terminal Box	16-Pin
<b>MS</b>	<b>3.32</b> (84.3)	<b>5.58</b> (141.7)	<b>4.08</b> (103.6)

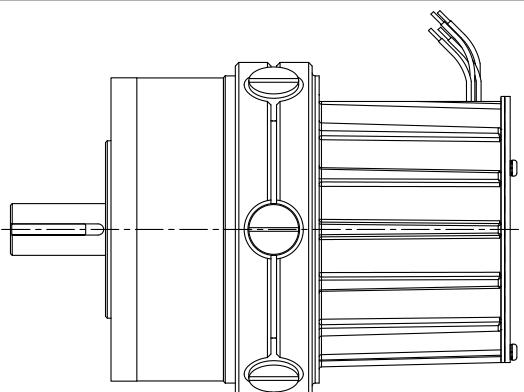
Flange Type	Shaft				Flange/Face				Mounting Hole		
	AH	U (MAX)	KEY	KS	AJ	AK	BB	BD	BE (MAX)	BF Dia.	Tap
<b>Round</b>	<b>1.70</b> (43.18)	<b>0.8750</b> (22.23)	<b>0.188 SQ.</b> <b>X 1.50</b>	<b>0.761-</b> <b>0.771</b>	<b>3.750</b> (95.25)	<b>3.000</b> (76.20)	<b>0.09</b> (2.29)	<b>5.12</b> (130.05)	<b>0.44</b> (11.18)	-	<b>3/8-16</b> ∇.50
<b>Square</b>	<b>1.70</b> (43.18)	<b>0.8750</b> (22.23)	<b>0.188 SQ.</b> <b>X 1.50</b>	<b>0.761-</b> <b>0.771</b>	<b>3.750</b> (95.25)	<b>3.000</b> (76.20)	<b>0.09</b> (2.29)	<b>5.12</b> (130.05)	<b>0.44</b> (11.18)	<b>0.44</b> (11.18)	<b>3/8-16</b> ∇.50
<b>NEMA 56C</b>	<b>2.06</b> (52.32)	<b>0.6250</b> (15.88)	<b>0.188 SQ.</b> <b>X 1.50</b>	<b>0.507-</b> <b>0.517</b>	<b>5.875</b> (149.23)	<b>4.500</b> (114.30)	<b>0.09</b> (2.29)	<b>6.50</b> (165.10)	<b>0.44</b> (11.18)	-	<b>3/8-16</b> <b>THRU</b>

## CONNECTORS & PIN-OUT INFORMATION

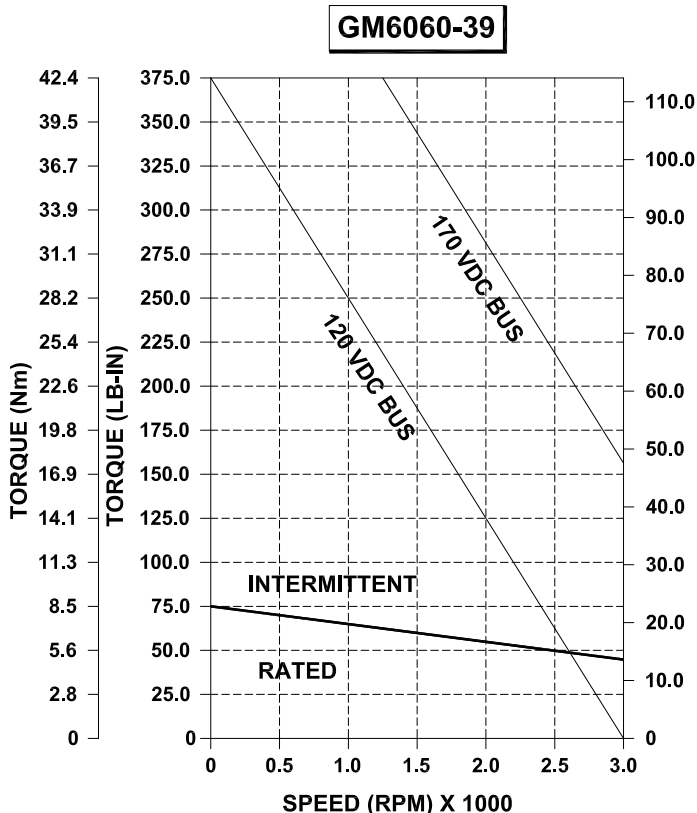
With a positive voltage applied to the red motor lead (Motor +) with respect to the black motor lead (Motor -), the motor drive shaft will turn in the **counter-clockwise** direction as viewed from the shaft end.

GM 4000 Series Standard 16-pin MS Connector Location	MS3102R-24-07P	Encoder Feedback	Resolver Feedback
 <p style="font-size: small; margin-top: 10px;">•Straight Mating Connector: MS3106F-24-07S •90° Mating Connector: MS3108E-24-07S</p>	<b>16-Pin</b>	<b>Function</b>	<b>Function</b>
	A	Channel A+	Sine Sig (S1)
	B	Channel A-	Sine Com (S2)
	C	Channel B+	Cosine Sig (S3)
	D	Channel B-	Cosine Com (S4)
	E	Channel Z+	Reference Sig (R1)
	F	Channel Z-	Reference Com (R2)
	G	+5 VDC	N/C
	H	Common	N/C
	I	Cable Shield	N/C
	J	Tachometer +	
	K	Tachometer -	
	L	Tachometer Cable Shield	
	M	Brake +	
	N	Motor +	
	O	Brake -	
P	Motor -		

GM6000 Terminal Box	GM6000 NPT
	

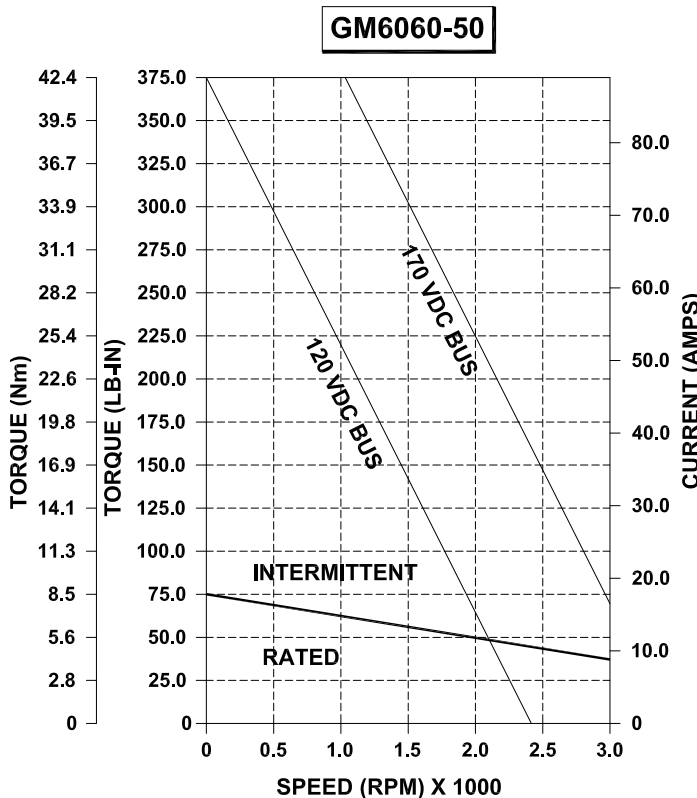
GM6000 Flying leads	
	<p><b>Glentek's GM6000 Series</b> offer Special mounting options please contact a Glentek Sales Engineer for detailed information.</p>

## GM6060-39 PERFORMANCE DATA



<b>Power @ Max Speed</b>	<b>HP</b>	3.57
	<b>KW</b>	2.663
<b>Cont. Stall Rating</b>	<b>Lb-in</b>	75
	<b>Nm</b>	8.47
	<b>Amps</b>	22.8
<b>Peak Stall Rating</b>	<b>Lb-in</b>	375.0
	<b>Nm</b>	42.35
	<b>Amps</b>	114.0
<b>Torque Constant</b>	<b>Lb-in/A</b>	3.29
	<b>Nm/A</b>	0.37
<b>Resistance</b>	<b>Ohms</b>	0.3
<b>Inductance</b>	<b>mH</b>	0.95
<b>Maximum Speed</b>	<b>RPM</b>	3000
<b>Back EMF</b>	<b>V/Krpm</b>	39
<b>Armature Inertia</b>	<b>Lb-in-sec<sup>2</sup></b>	0.05300
	<b>Kg-m<sup>2</sup></b>	0.005989

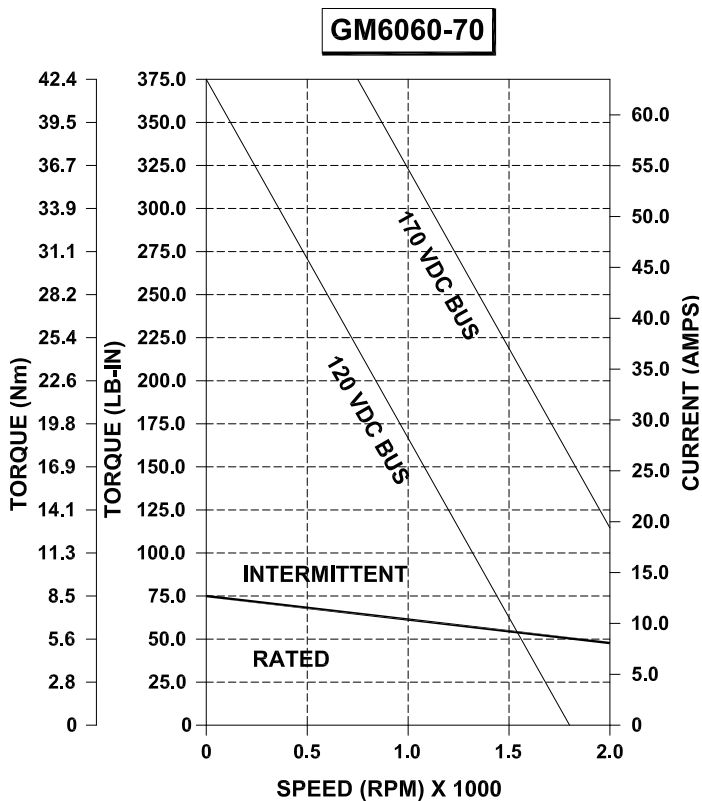
## GM6060-50 PERFORMANCE DATA



<b>Power @ Max Speed</b>	<b>HP</b>	2.98
	<b>KW</b>	2.223
<b>Cont. Stall Rating</b>	<b>Lb-in</b>	75
	<b>Nm</b>	8.47
	<b>Amps</b>	17.8
<b>Peak Stall Rating</b>	<b>Lb-in</b>	375.0
	<b>Nm</b>	42.35
	<b>Amps</b>	89.0
<b>Torque Constant</b>	<b>Lb-in/A</b>	4.22
	<b>Nm/A</b>	0.48
<b>Resistance</b>	<b>Ohms</b>	0.8
<b>Inductance</b>	<b>mH</b>	1.00
<b>Maximum Speed</b>	<b>RPM</b>	2500
<b>Back EMF</b>	<b>V/Krpm</b>	50
<b>Armature Inertia</b>	<b>Lb-in-sec<sup>2</sup></b>	0.05300
	<b>Kg-m<sup>2</sup></b>	0.005989

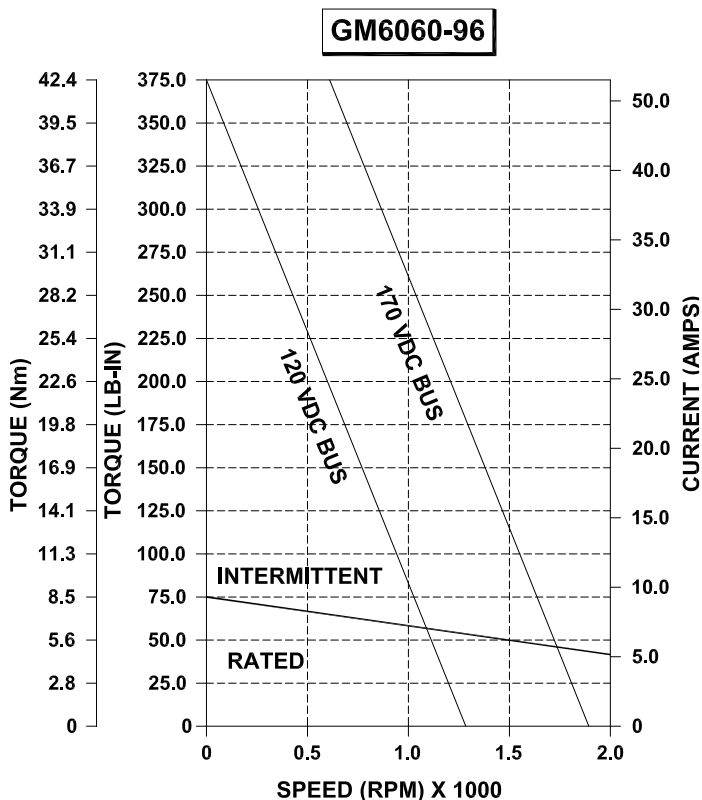
**NOTE:** All ratings based on a 40°C ambient temperature with the motor face mounted to a 12" x 12" x 1/2" aluminum heatsink.

## GM6060-70 PERFORMANCE DATA



<b>Power @ Max Speed</b>	<b>HP</b>	2.14
	<b>KW</b>	1.596
<b>Cont. Stall Rating</b>	<b>Lb-in</b>	75
	<b>Nm</b>	8.47
	<b>Amps</b>	12.5
<b>Peak Stall Rating</b>	<b>Lb-in</b>	375.0
	<b>Nm</b>	42.35
	<b>Amps</b>	62.4
<b>Torque Constant</b>	<b>Lb-in/A</b>	5.91
	<b>Nm/A</b>	0.67
<b>Resistance</b>	<b>Ohms</b>	1.2
<b>Inductance</b>	<b>mH</b>	0.95
<b>Maximum Speed</b>	<b>RPM</b>	1800
<b>Back EMF</b>	<b>V/Krpm</b>	70
<b>Armature Inertia</b>	<b>Lb-in-sec<sup>2</sup></b>	0.05300
	<b>Kg-m<sup>2</sup></b>	0.005989

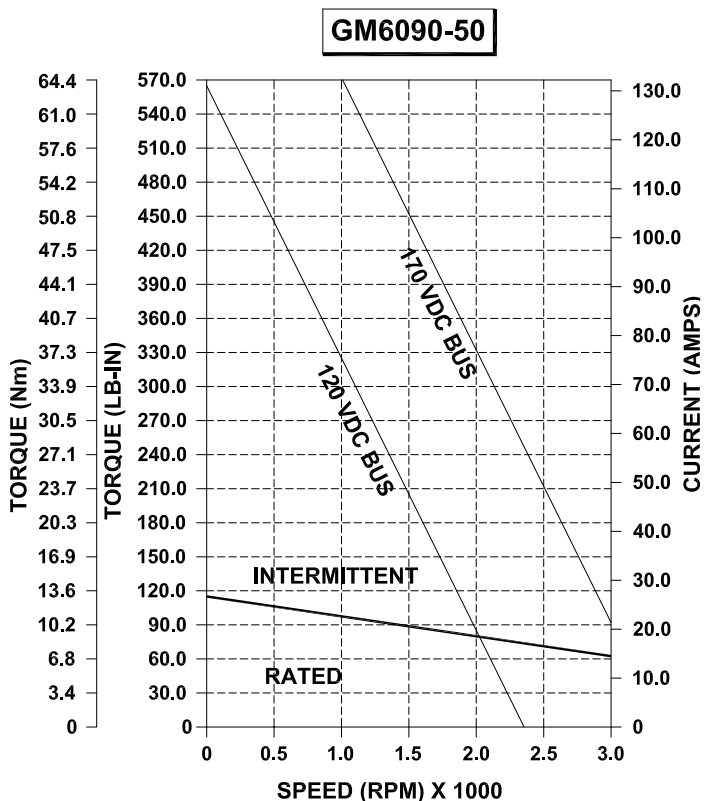
## GM6060-96 PERFORMANCE DATA



<b>Power @ Max Speed</b>	<b>HP</b>	1.79
	<b>KW</b>	1.335
<b>Cont. Stall Rating</b>	<b>Lb-in</b>	75
	<b>Nm</b>	8.47
	<b>Amps</b>	9.3
<b>Peak Stall Rating</b>	<b>Lb-in</b>	375.0
	<b>Nm</b>	42.35
	<b>Amps</b>	46.5
<b>Torque Constant</b>	<b>Lb-in/A</b>	8.11
	<b>Nm/A</b>	0.92
<b>Resistance</b>	<b>Ohms</b>	1.4
<b>Inductance</b>	<b>mH</b>	0.95
<b>Maximum Speed</b>	<b>RPM</b>	1500
<b>Back EMF</b>	<b>V/Krpm</b>	96
<b>Armature Inertia</b>	<b>Lb-in-sec<sup>2</sup></b>	0.05300
	<b>Kg-m<sup>2</sup></b>	0.005989

**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.

**GM6090-50 PERFORMANCE DATA**



<b>Power @ Max Speed</b>	<b>HP</b>	4.46
	<b>KW</b>	3.327
<b>Cont. Stall Rating</b>	<b>Lb-in</b>	113
	<b>Nm</b>	12.77
	<b>Amps</b>	26.7
<b>Peak Stall Rating</b>	<b>Lb-in</b>	565.0
	<b>Nm</b>	63.85
	<b>Amps</b>	133.5
<b>Torque Constant</b>	<b>Lb-in/A</b>	4.22
	<b>Nm/A</b>	0.48
<b>Resistance</b>	<b>Ohms</b>	0.4
<b>Inductance</b>	<b>mH</b>	1.00
<b>Maximum Speed</b>	<b>RPM</b>	2500
<b>Back EMF</b>	<b>V/Krpm</b>	50
<b>Armature Inertia</b>	<b>Lb-in-sec<sup>2</sup></b>	0.08000
	<b>Kg-m<sup>2</sup></b>	0.009040

**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.

## GM6000 SERIES MODEL NUMBERING

This section explains the model numbering system for Glentek's GM6000 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** 60 = 6.0" Motor
- Stack Length** 60 = 6.0 inch stack
- Back EMF Constant** 39 = 39 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** 0 = Standard Round
- 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	
<b>60</b>	6.0" Motor

Stack Length	
<b>60</b>	6.0" Stack
<b>90</b>	9.0" Stack

Back EMF Constant			
6.0" only		9.0" only	
<b>39</b>	39V/Krpm	<b>70</b>	70V/Krpm
<b>50</b>	50V/Krpm	<b>96</b>	96V/Krpm

For custom Back EMF, Please Contact Glentek

Brake Option			
<b>0</b>	No brake installed	<b>1</b>	24 VDC Brake
<b>2</b>	Special		

Tachometer Option			
<b>0</b>	No tachometer installed	<b>2</b>	7 VDC tachometer
<b>1</b>	3 VDC tachometer	<b>3</b>	9.5 VDC tachometer
		<b>4</b>	Special
		-	-

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

Brushless Resolver Option			
<b>0</b>	No resolver installed	<b>1</b>	Brushless resolver
		<b>2</b>	Special

Flange Type			
<b>0</b>	Standard Round	<b>5</b>	NEMA 56C
<b>1</b>	Standard Square	<b>6</b>	Special

Lead Termination			
<b>0</b>	Flying leads exiting through a rubber grommet	<b>6</b>	Liquid tight strain relief with flying leads
<b>1</b>	.5" NPT with flying leads	<b>7</b>	Terminal Box
<b>2</b>	.75" NPT with flying leads	<b>8</b>	Special
<b>5</b>	16-Pin, Male MS connector		

Wiring Diagram (MS connector lead termination only)			
<b>0</b>	Glentek Standard	<b>1</b>	Special

Sealing Option			
<b>0</b>	No shaft seal	<b>1</b>	Shaft Seal
		<b>2</b>	Special

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