



## GM8224S009

Lo-Cog® DC Servo Gearmotor

Assembly Data	Symbol	Units	Value	
Reference Voltage	E	V	12	
No-Load Speed	S <sub>NL</sub>	rpm (rad/s)	720	(75.4)
Continuous Torque (Max.) <sup>1</sup>	T <sub>C</sub>	oz-in (N-m)	15	(1.0E-01)
Peak Torque (Stall) <sup>2</sup>	T <sub>PK</sub>	oz-in (N-m)	42	(3.0E-01)
Weight	W <sub>M</sub>	oz (g)	11.2	(316)
Motor Data				
Torque Constant	K <sub>T</sub>	oz-in/A (N-m/A)	3.09	(2.18E-02)
Back-EMF Constant	K <sub>E</sub>	V/krpm (V/rad/s)	2.29	(2.18E-02)
Resistance	R <sub>T</sub>	Ω	4.33	
Inductance	L	mH	2.34	
No-Load Current	I <sub>NL</sub>	A	0.18	
Peak Current (Stall) <sup>2</sup>	I <sub>P</sub>	A	2.77	
Motor Constant	K <sub>M</sub>	oz-in/√W (N-m/√W)	1.49	(1.05E-02)
Friction Torque	T <sub>F</sub>	oz-in (N-m)	0.35	(2.5E-03)
Rotor Inertia	J <sub>M</sub>	oz-in-s <sup>2</sup> (kg-m <sup>2</sup> )	2.3E-04	(1.6E-06)
Electrical Time Constant	τ <sub>E</sub>	ms	0.54	
Mechanical Time Constant	τ <sub>M</sub>	ms	14.7	
Viscous Damping	D	oz-in/krpm (N-m-s)	0.020	(1.4E-06)
Damping Constant	K <sub>D</sub>	oz-in/krpm (N-m-s)	1.6	(1.1E-04)
Maximum Winding Temperature	θ <sub>MAX</sub>	°F (°C)	311	(155)
Thermal Impedance	R <sub>TH</sub>	°F/watt (°C/watt)	70.5	(21.4)
Thermal Time Constant	τ <sub>TH</sub>	min	10.7	
Gearbox Data				
Reduction Ratio			6.3	
Efficiency <sup>3</sup>			0.95	
Maximum Allowable Torque		oz-in (N-m)	100	(0.71)
Encoder Data				
Channels			3	
Resolution		CPR	500	

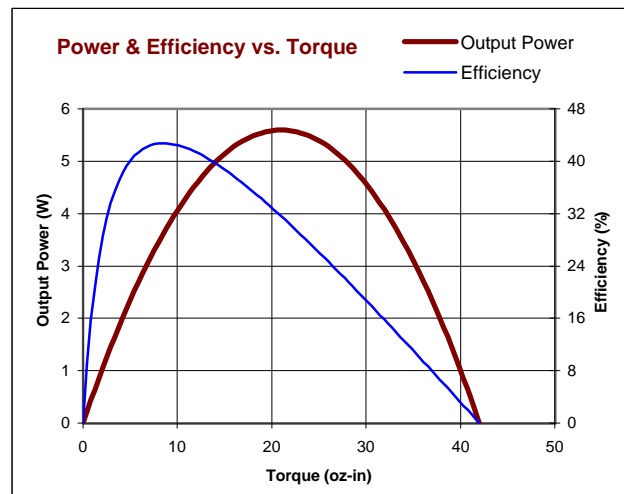
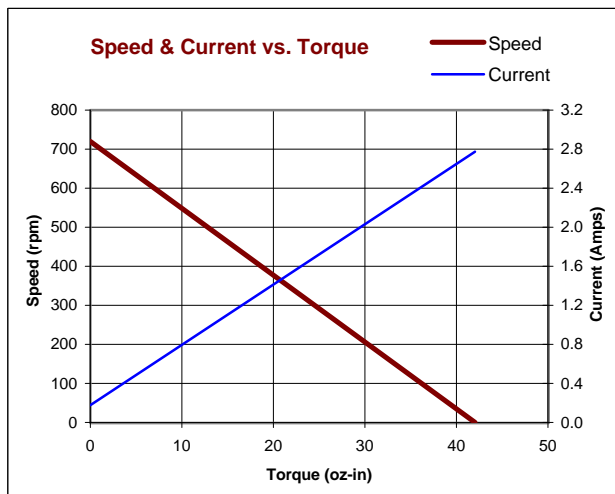
1 - Specified at max. winding temperature at 25°C ambient without heat sink. 2 - Theoretical values supplied for reference only.  
3 - Effective gearbox efficiency for this unit improved by use of ball bearings.

### Included Features

- 2-Pole Stator
- Ceramic Magnets
- Heavy-Gauge Steel Housing
- 7-Slot Armature
- Silicon Steel Laminations
- Stainless Steel Shaft
- Copper-Graphite Brushes
- Diamond Turned Commutator
- Motor Ball Bearings
- Output Ball Bearing
- Standard Gears

### Customization Options

- Alternate Winding
- Sleeve or Ball Bearings
- Modified Output Shaft
- Custom Cable Assembly
- Special Brushes
- EMI/RFI Suppression
- Alternate Gear Material
- Special Lubricant
- Optional Encoder
- Fail-Safe Brake



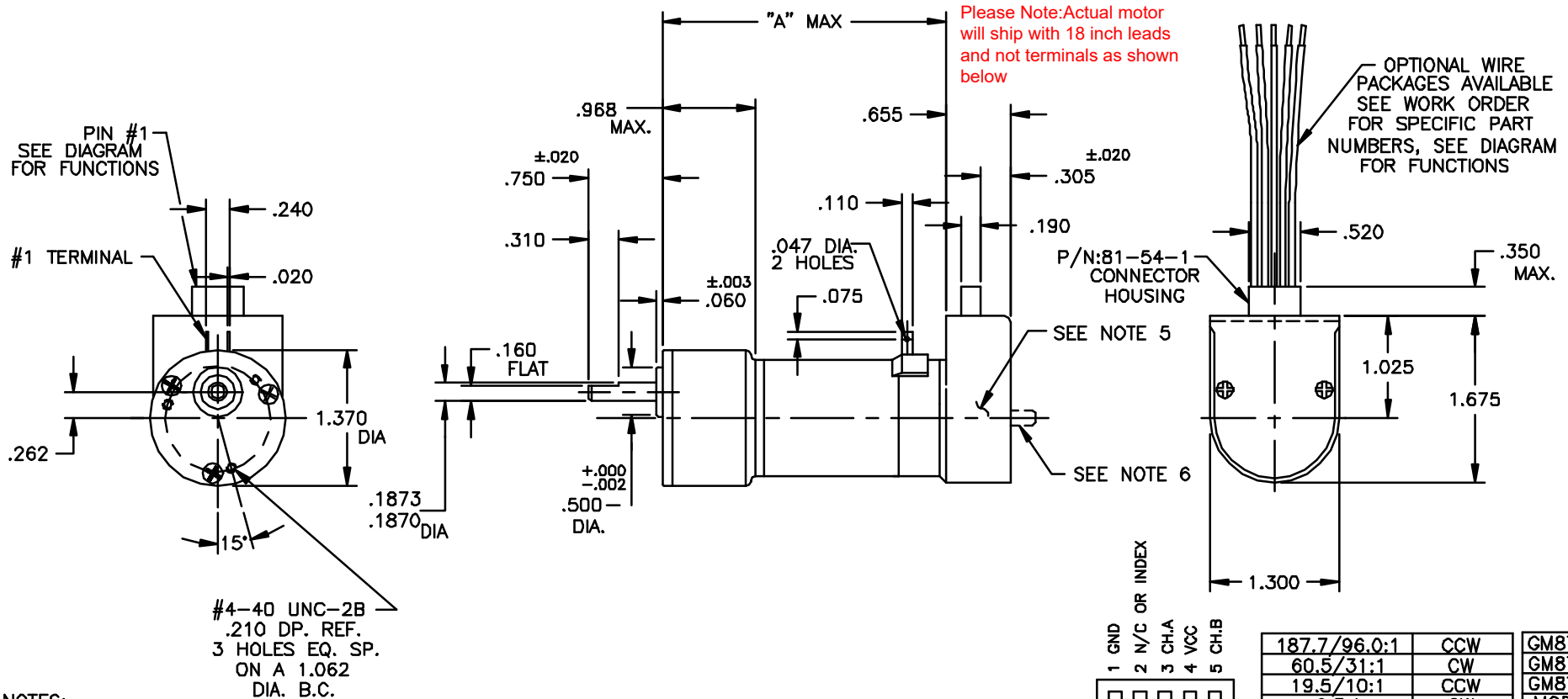
All values are nominal. Specifications subject to change without notice. Graphs are shown for reference only.

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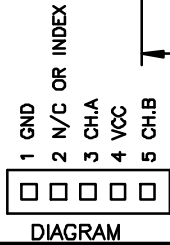
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REVISIONS				
LTR	DESCRIPTION	DRFT/ENGR	DATE	APPR
B	REDRAWN, UPDATED	DLF/DLF		



Please Note: Actual motor will ship with 18 inch leads and not terminals as shown below



187.7/96.0:1	CCW	GM87X4	3.230
60.5/31:1	CW	GM87X3	2.980
19.5/10:1	CCW	GM87X2	2.855
6.3:1	CW	MODEL	"A"
GEAR RATIO	SHAFT ROTATION	"A" MAX	

- NOTES:
- SHAFT ROTATION IS DETERMINED WITH POSITIVE VOLTAGE (+) ON #1 TERMINAL, WHILE LOOKING AT MOUNTING END.
  - MOTOR IS PRELOADED BALL BEARINGS PER P-107,.020 MAX. ON OUTPUT SHAFT.
  - MAX. GEARBOX TORQUE RATING IS 100 oz.in. STANDARD GEARBOX, 160 oz.in. FOR CUT STEEL.
  - TERMINALS ARE TIN PLATED FOR SOLDERING, WILL MATE WITH .110 PUSH-ON RECEPTACLE.
  - ENCLOSED IS A HEDS-91X0 OPTICAL ENCODER.
  - OPTIONAL REAR SHAFT EXTENSIONS AVAILABLE.
  - ENCODER LEAD CONNECTIONS TO BE DONE PER INDIVIDUAL LEAD WIRE DRAWING.

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:</small> FRACTION DECIMAL ANGLES ±1/84 ±.015 ±15° .001 ±.010 ±15° .001 ±.005 BREAK ALL SHARP EDGES	FILE: 150\306	
	DRAFTED BY: DLF DATE: 15 JUL 94 ENGINEERED BY: DLF DATE: 15 JUL 94 APPROVED BY: NEXT ASSY:	
MATERIAL:	USED ON:	<b>DWG. NO.</b> B- 150-306
FINISH:		<b>SCALE:</b> NONE <b>SHEET</b> 1 OF 1