



GM8712-21

Lo-Cog® DC Gearmotor

Assembly Data	Symbol	Units	Value
Reference Voltage	E	V	19.1
No-Load Speed	S_{NL}	rpm (rad/s)	396 (41.5)
Continuous Torque (Max.) ¹	T_C	oz-in (N-m)	16 (1.1E-01)
Peak Torque (Stall) ²	T_{PK}	oz-in (N-m)	72 (5.1E-01)
Weight	W_M	oz (g)	7.0 (198)
Motor Data			
Torque Constant	K_T	oz-in/A (N-m/A)	3.06 (2.16E-02)
Back-EMF Constant	K_E	V/krpm (V/rad/s)	2.27 (2.16E-02)
Resistance	R_T	Ω	10.8
Inductance	L	mH	5.40
No-Load Current	I_{NL}	A	0.14
Peak Current (Stall) ²	I_P	A	1.76
Motor Constant	K_M	oz-in/ \sqrt{W} (N-m/ \sqrt{W})	0.93 (6.57E-03)
Friction Torque	T_F	oz-in (N-m)	0.35 (2.5E-03)
Rotor Inertia	J_M	oz-in-s ² (kg-m ²)	1.3E-04 (9.2E-07)
Electrical Time Constant	τ_E	ms	0.50
Mechanical Time Constant	τ_M	ms	21.5
Viscous Damping	D	oz-in/krpm (N-m-s)	0.009 (5.9E-07)
Damping Constant	K_D	oz-in/krpm (N-m-s)	0.64 (4.3E-05)
Maximum Winding Temperature	θ_{MAX}	°F (°C)	311 (155)
Thermal Impedance	R_{TH}	°F/watt (°C/watt)	75.9 (24.4)
Thermal Time Constant	τ_{TH}	min	7.8
Gearbox Data			
Reduction Ratio			19.5
Efficiency			0.73
Maximum Allowable Torque		oz-in (N-m)	100 (0.71)
Encoder Data			

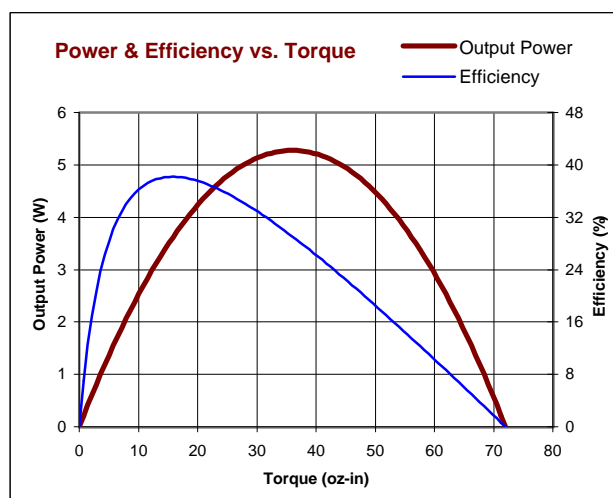
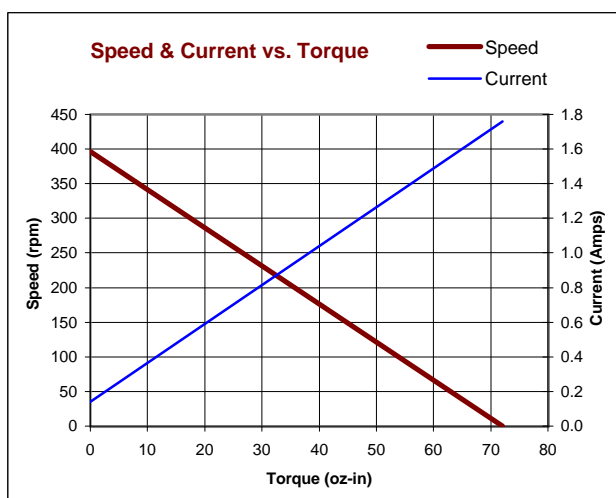
1 - Specified at max. winding temperature at 25°C ambient without heat sink. 2 - Theoretical values supplied for reference only.

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 Sleeve Bearings
Output Sleeve 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

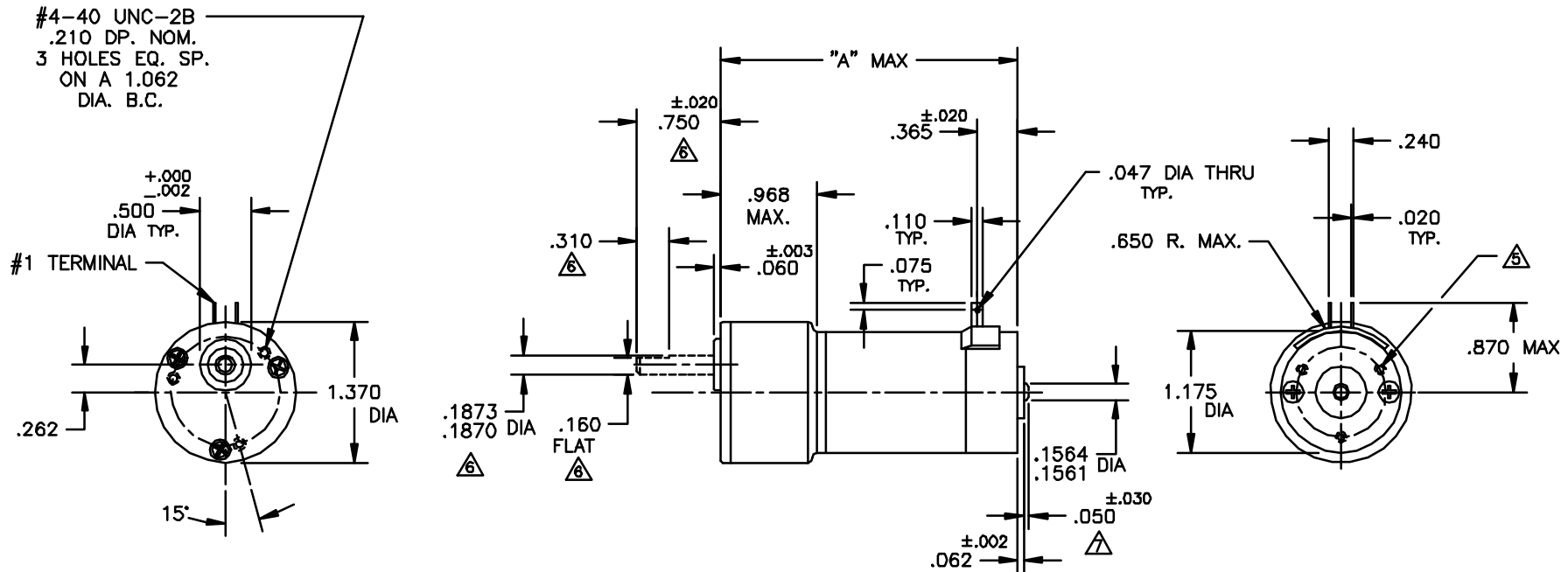


All values are nominal. Specifications subject to change without notice. Graphs are shown for reference only.

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REVISIONS				
LTR	DESCRIPTION	DRFT/ENGR	DATE	APPR
H	REDRAWN, UPDATED TO CURRENT STD.	DLF	6/28/94	JVM
J	UPDATED TO CURRENT STD.	RJS/RJS		



NOTES:

- SHAFT ROTATION IS SHOWN WHILE VIEWING MOUNTING END, WITH POSITIVE (+) VOLTAGE APPLIED TO # 1 TERMINAL.
 - TERMINALS ARE PLATED FOR SOLDERING.
 - MAX. GEARBOX TORQUE RATING IS 100 OZ.IN., STANDARD SINTERED GEARS. MAX. GEARBOX TORQUE RATING IS 160 OZ.IN., CUT STEEL GEARS.
 - ENDPLAY .020 MAX. ON OUTPUT SHAFT, .015 MAX. ON MOTOR SHAFT.
- OPTIONAL MOUNTING PATTERN #2-56 UNC-2B, (3) HOLES EQUALLY SPACED ON A .875 DIA. B.C., .125 MAX. THREAD DEPTH.
- ALL SHAFT DIMENSIONS SHOWN ARE STD. (10-385). FOR ALL OTHER CONFIGURATIONS REFER TO DATA SHEET FOR PART NUMBERS.
- OPTIONAL REAR SHAFT EXTENSIONS AVAILABLE.

GEAR RATIO	DIRECTION		
187/96:1	CCW	3.285	GM87X4
60.5/31:1	CW	3.035	GM87X3
19.5/10:1	CCW	2.910	GM87X2
6.3:1	CW	"A" MAX.	MODEL NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTION DECIMAL ANGLES ±1/64 .001 ±1° XX ±.010 XXX ±.005 BREAK ALL SHARP EDGES		FILE: 150/28 DRAFTED BY: DLF DATE: 6/24/94 ENGINEERED BY: DLF APPROVED BY: JVM NEXT ASSY:	 TITLE: OUTLINE & MOUNTING DIMENSIONS GM87XX STD. GEARBOX
MATERIAL:	FINISH:	USED ON:	
DWG. NO. B- 150-28			REV. J
SCALE: D.N.S.			SHEET 1 OF 1