



## GM9236S020

Lo-Cog® DC Gearmotor

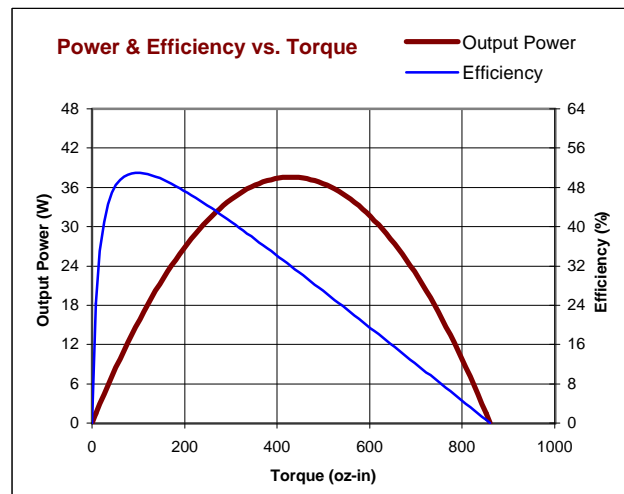
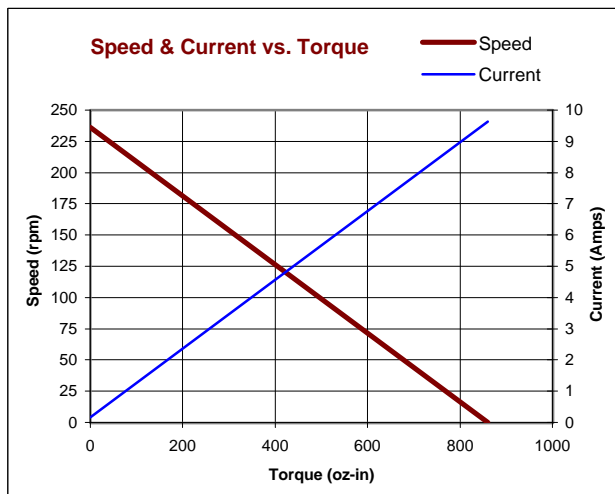
Assembly Data	Symbol	Units	Value	
Reference Voltage	E	V	24	
No-Load Speed	S <sub>NL</sub>	rpm (rad/s)	236	(24.7)
Continuous Torque (Max.) <sup>1</sup>	T <sub>C</sub>	oz-in (N-m)	153	(1.1E+00)
Peak Torque (Stall) <sup>2</sup>	T <sub>PK</sub>	oz-in (N-m)	860	(6.1E+00)
Weight	W <sub>M</sub>	oz (g)	20.3	(576)
Motor Data				
Torque Constant	K <sub>T</sub>	oz-in/A (N-m/A)	6.49	(4.58E-02)
Back-EMF Constant	K <sub>E</sub>	V/krpm (V/rad/s)	4.80	(4.58E-02)
Resistance	R <sub>T</sub>	Ω	2.49	
Inductance	L	mH	2.63	
No-Load Current	I <sub>NL</sub>	A	0.16	
Peak Current (Stall) <sup>2</sup>	I <sub>P</sub>	A	9.64	
Motor Constant	K <sub>M</sub>	oz-in/√W (N-m/√W)	4.11	(2.90E-02)
Friction Torque	T <sub>F</sub>	oz-in (N-m)	0.80	(5.6E-03)
Rotor Inertia	J <sub>M</sub>	oz-in-s <sup>2</sup> (kg-m <sup>2</sup> )	1.0E-03	(7.1E-06)
Electrical Time Constant	τ <sub>E</sub>	ms	1.06	
Mechanical Time Constant	τ <sub>M</sub>	ms	8.5	
Viscous Damping	D	oz-in/krpm (N-m-s)	0.053	(3.5E-06)
Damping Constant	K <sub>D</sub>	oz-in/krpm (N-m-s)	12.5	(8.5E-04)
Maximum Winding Temperature	θ <sub>MAX</sub>	°F (°C)	311	(155)
Thermal Impedance	R <sub>TH</sub>	°F/watt (°C/watt)	56.3	(13.5)
Thermal Time Constant	τ <sub>TH</sub>	min	13.5	
Gearbox Data				
Reduction Ratio			19.7	
Efficiency <sup>3</sup>			0.84	
Maximum Allowable Torque		oz-in (N-m)	500	(3.53)
Encoder Data				
<small>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.</small>				

### 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
- Wide Face 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

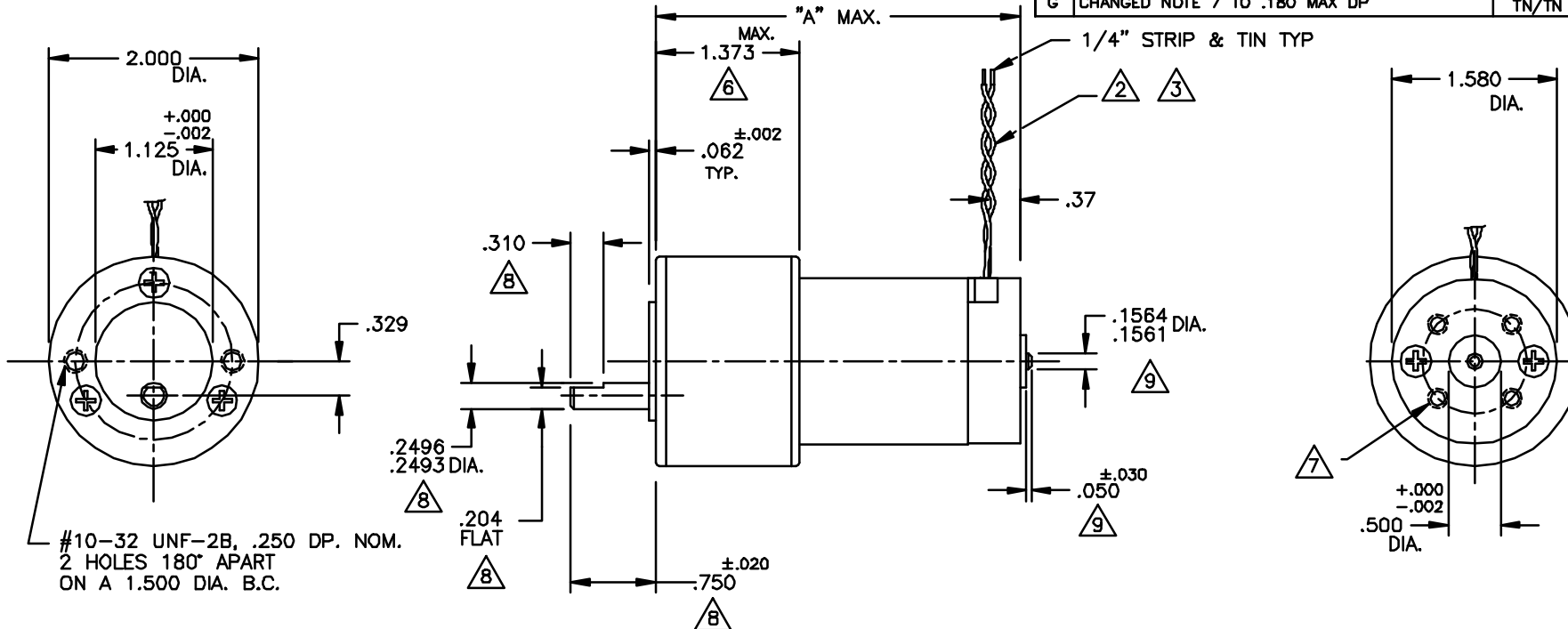


All values are nominal. Specifications subject to change without notice. Graphs are shown for reference only.

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REVISIONS				
LTR	DESCRIPTION	DRFT/ENGR	DATE	APPR
E	REVISED NOTE 1	RJS/RJS	10/22/97	JRM
F	1/4" STRIP & TIN WAS "STRIP"	KUH/KUH	5/12/98	JRM
G	CHANGED NOTE 7 TO .180 MAX DP	TN/TN		



#10-32 UNF-2B, .250 DP. NOM.  
2 HOLES 180° APART  
ON A 1.500 DIA. B.C.

NOTES:

1. SHAFT ROTATION IS SHOWN WHILE VIEWING OUTPUT SHAFT WITH POSITIVE VOLTAGE (+) APPLIED TO RED LEAD
- 2 LEADS ARE 22 AWG (7x30), PVC INSULATION, UL STYLE 1569/1007. ONE LEAD IS RED, ONE BLACK
- 3 STANDARD LEAD LENGTH IS 18" ±1/2"
- 4 ENDPLAY .015 MAX. ON MOTOR SHAFT, .020 MAX. ON OUTPUT SHAFT.
- 5 LIMIT TORQUE ON GEARBOX TO 175 oz.in., STANDARD (STD.)GEARING LIMIT TORQUE ON GEARBOX TO 300 oz.in., HIGH TORQUE (H-T) GEARING LIMIT TORQUE ON GEARBOX TO 500 oz.in., WIDE FACE (WF) GEARING
- 6 FOR WIDE FACE RATIOS 728/1419:1 SEE 150-408-2 FOR 2426.9/4732.5:1 RATIOS (ALL GEAR TYPES) SEE 150-408-2
- 7 OPTIONAL REAR MOUNTING PATTERN AVAILABLE, #6-32 UNC-2B .180 DP. MAX., 4 HOLES ON A 1.000 DIA. B.C..
- 8 ALL SHAFT DIMENSIONS NOTED ARE STANDARD (10-535); FOR ALL OTHER SHAFT CONFIGURATIONS REFER TO DATA SHEET FOR PART NUMBERS.
- 9 OPTIONAL REAR SHAFT EXTENSIONS AVAILABLE. FOR MOTOR SHAFT CONFIG. SEE DATA SHEET.

6	728/1419:1	CW
ALL TYPES	218.4/426:1	CCW
ALL TYPES	65.5/127.7:1	CW
ALL TYPES	19.7/38.3:1	CCW
ALL TYPES	5.9/11.5:1	CW
GEARING	GEAR RATIO	DIRECTION

GM92X6	4.326
GM92X5	3.976
GM92X4	3.676
GM92X3	3.476
GM92X2	3.101
MODEL NO.	"A" MAX.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTION DECIMAL ANGLES ±1/64 .015 ±1° XX ±0.015 XXX ±0.005 BREAK ALL SHARP EDGES	FILE: 150/408	
	DRAFTED BY: RJS DATE: 3/22/96	
MATERIAL:	ENGINEERED BY: DLF DATE: 3/22/96	DWG. NO. B-150-408
FINISH:	APPROVED BY: JRM DATE: 3/22/96	REV. G
	NEXT ASSY:	SCALE: DNS SHEET 1 OF 1
	USED ON:	