

# GM14902S017

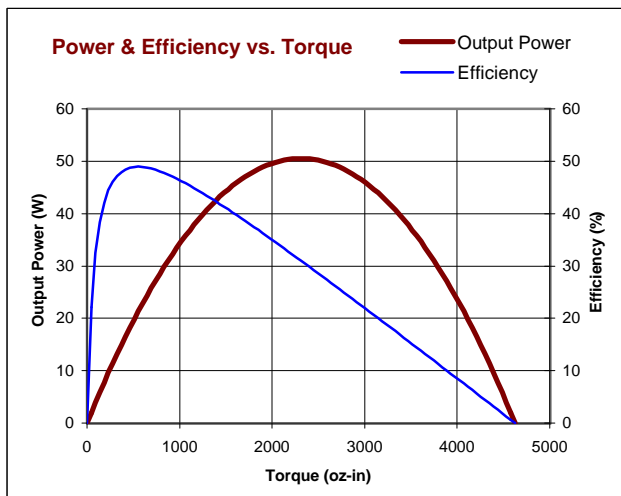
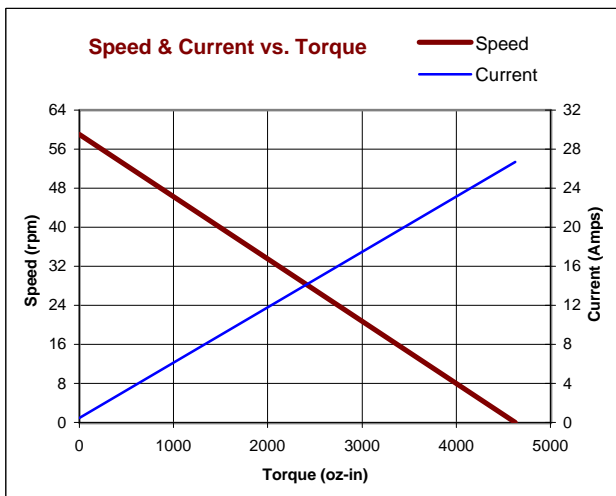
Lo-Cog® DC Gearmotor



Assembly Data	Symbol	Units	Value	
Reference Voltage	E	V	12	
No-Load Speed	S <sub>NL</sub>	rpm (rad/s)	59	(6.2)
Continuous Torque (Max.) <sup>1</sup>	T <sub>C</sub>	oz-in (N-m)	500	(3.5)
Peak Torque (Stall) <sup>2</sup>	T <sub>PK</sub>	oz-in (N-m)	4625	(33)
Weight	W <sub>M</sub>	oz (g)	32.9	(932)
Motor Data				
Torque Constant	K <sub>T</sub>	oz-in/A (N-m/A)	3.90	(2.75E-02)
Back-EMF Constant	K <sub>E</sub>	V/krpm (V/rad/s)	2.88	(2.75E-02)
Resistance	R <sub>T</sub>	Ω	0.45	
Inductance	L	mH	0.63	
No-Load Current	I <sub>NL</sub>	A	0.49	
Peak Current (Stall) <sup>2</sup>	I <sub>P</sub>	A	26.7	
Motor Constant	K <sub>M</sub>	oz-in/√W (N-m/√W)	5.93	(4.19E-02)
Friction Torque	T <sub>F</sub>	oz-in (N-m)	1.2	(8.5E-03)
Rotor Inertia	J <sub>M</sub>	oz-in-s <sup>2</sup> (kg-m <sup>2</sup> )	2.3E-03	(1.6E-05)
Electrical Time Constant	τ <sub>E</sub>	ms	1.47	
Mechanical Time Constant	τ <sub>M</sub>	ms	9.3	
Viscous Damping	D	oz-in/krpm (N-m-s)	0.17	(1.1E-05)
Damping Constant	K <sub>D</sub>	oz-in/krpm (N-m-s)	26	(1.8E-03)
Maximum Winding Temperature	θ <sub>MAX</sub>	°F (°C)	311	(155)
Thermal Impedance	R <sub>TH</sub>	°F/watt (°C/watt)	48.2	(9.0)
Thermal Time Constant	τ <sub>TH</sub>	min	24.0	
Gearbox Data				
Reduction Ratio			65.5	
Efficiency <sup>3</sup>			0.80	
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
  - 11-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



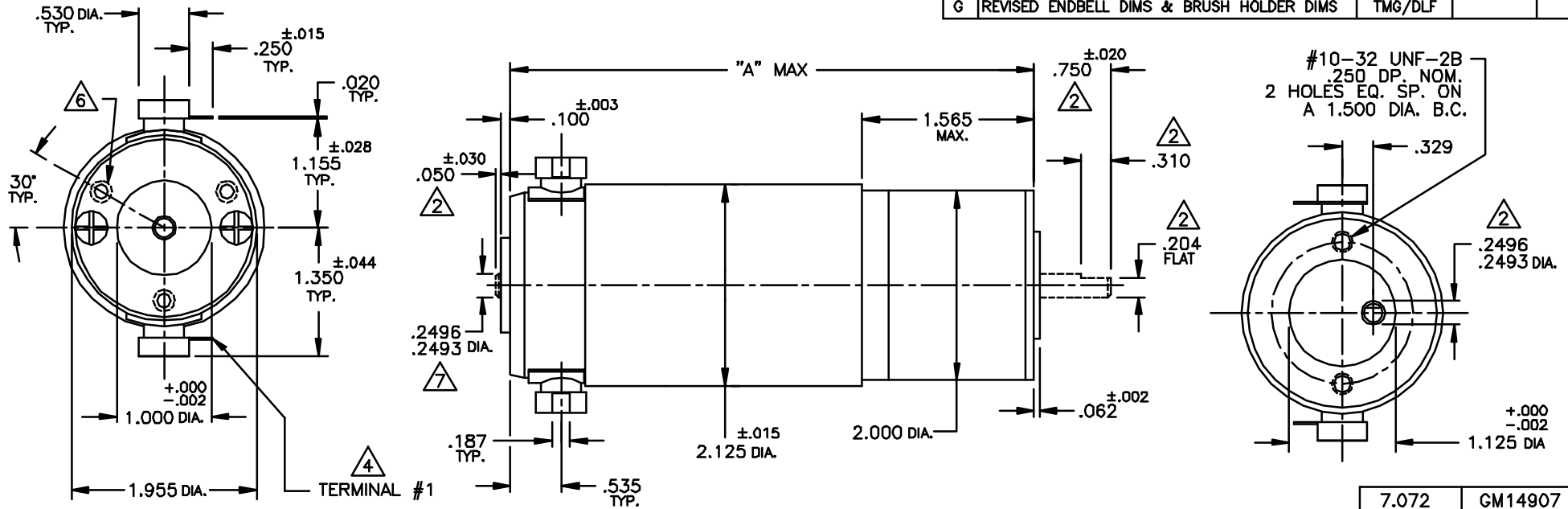
All values are nominal. Specifications subject to change without notice. Graphs are shown for reference only.

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REVISIONS				
LTR	DESCRIPTION	DRFT/ENGR	DATE	APPR
C	REDRAWN, UPDATED TO CURRENT STDS.	KUH/KUH	9/15/95	JRM
D	ADDED -7 LENGTH TO CHART	KUH/KUH	1/7/96	HCL
E	REVISED NOTE 3	RJS/RJS	9/5/97	HCL
F	REVISED MTG. ENDBELL/GEARPLATE PER ECO	EWS/EWS	12/12/00	JRM
G	REVISED ENDBELL DIMS & BRUSH HOLDER DIMS	TMG/DLF		



**NOTES:**

1. SHAFT ROTATION IS FIGURED WHILE VIEWING THE MOUNTING END, WITH POSITIVE VOLTAGE (+) APPLIED TO TERMINAL #1. SEE CHART.
2. ALL OUTPUT SHAFT DIMENSIONS NOTED ARE STANDARD (10-535).
3. ENDPLAY: MOTOR SHAFT PRELOADED PER P-107 (BALL BEARINGS), OR .015 MAX ENDPLAY (SLEEVE BEARINGS). OUTPUT SHAFT: .020 MAX ENDPLAY.
4. TERMINALS WILL MATE WITH 187 SERIES AMP, INC., OR ETC, INC. PUSH ON RECEPTACLE.
5. MAX. GEARBOX TORQUE IS 175 OZ. IN., STANDARD GEARING.  
MAX. GEARBOX TORQUE IS 300 OZ. IN., HI-TORQUE GEARING.  
MAX. GEARBOX TORQUE IS 500 OZ. IN., WIDE FACE GEARING.
6. OPTIONAL REAR MOUNTING PATTERN, #6-32 UNC-2B, .200 NOM DP. ON A 1.531 DIA. B.C.
7. STANDARD SHAFT DIA. FOR GM14907 IS 8MM (.3147/.3144 DIA.).

ALL TYPES	728:1	CW	7.072	GM14907
ALL TYPES	218.4:1	CCW	6.322	GM14906
ALL TYPES	65.5:1	CW	5.822	GM14905
ALL TYPES	19.7:1	CCW	5.447	GM14904
STD	5.9:1	CW	5.072	GM14903
			4.572	GM14902
			4.322	GM14901
GEARING	GEAR RATIO	ROTATION	"A" MAX	MODEL NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTION DECIMAL ANGLES ±1/84 ±.015 ±15 ±.010 ±15 ±.005	FILE:	150\196	
	DRAFTED BY:	KUH	DATE: 12 SEP 95
BREAK ALL SHARP EDGES	ENGINEERED BY:	KUH	12 SEP 95
MATERIAL:	APPROVED BY:	JRM	15 SEP 95
FINISH:	NEXT ASSY:		
	USED ON:		

**PITTMAN**  
A Division of Penn Engineering & Manufacturing Corp.  
88 Chestnut Hill Corporate Park Drive

TITLE: OUTLINE & MOUNTING DIMENSIONS GM1490X SERIES	
DWG. NO. B-150-196	REV. G
SCALE: DNS	SHEET 1 OF 1