



## GM14904S013

Lo-Cog® DC Gearmotor

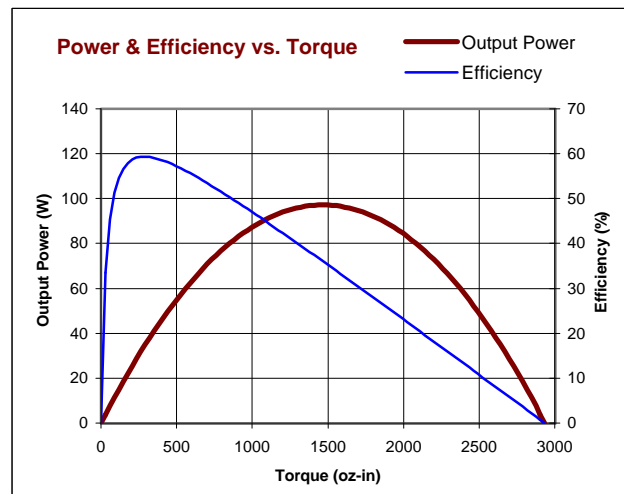
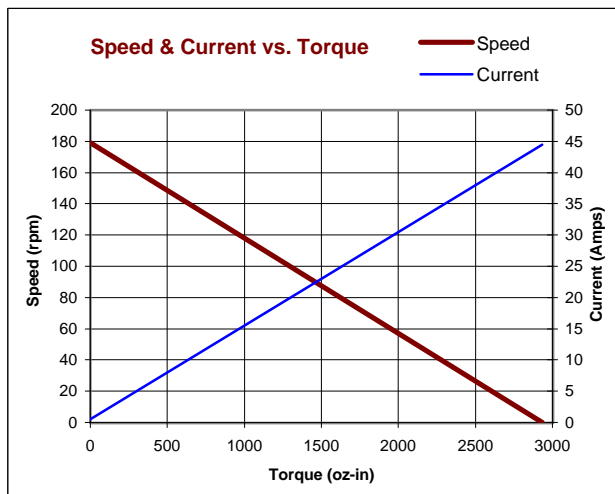
Assembly Data	Symbol	Units	Value	
Reference Voltage	E	V	12	
No-Load Speed	S <sub>NL</sub>	rpm (rad/s)	179	(18.7)
Continuous Torque (Max.) <sup>1</sup>	T <sub>C</sub>	oz-in (N-m)	374	(2.6)
Peak Torque (Stall) <sup>2</sup>	T <sub>PK</sub>	oz-in (N-m)	2934	(20.7)
Weight	W <sub>M</sub>	oz (g)	41.7	(1183)
Motor Data				
Torque Constant	K <sub>T</sub>	oz-in/A (N-m/A)	4.33	(3.06E-02)
Back-EMF Constant	K <sub>E</sub>	V/krpm (V/rad/s)	3.21	(3.06E-02)
Resistance	R <sub>T</sub>	Ω	0.27	
Inductance	L	mH	0.40	
No-Load Current	I <sub>NL</sub>	A	0.52	
Peak Current (Stall) <sup>2</sup>	I <sub>P</sub>	A	44.4	
Motor Constant	K <sub>M</sub>	oz-in/√W (N-m/√W)	8.63	(6.09E-02)
Friction Torque	T <sub>F</sub>	oz-in (N-m)	1.6	(1.1E-02)
Rotor Inertia	J <sub>M</sub>	oz-in-s <sup>2</sup> (kg-m <sup>2</sup> )	3.7E-03	(2.6E-05)
Electrical Time Constant	τ <sub>E</sub>	ms	1.58	
Mechanical Time Constant	τ <sub>M</sub>	ms	7.0	
Viscous Damping	D	oz-in/krpm (N-m-s)	0.18	(1.2E-05)
Damping Constant	K <sub>D</sub>	oz-in/krpm (N-m-s)	55	(3.7E-03)
Maximum Winding Temperature	θ <sub>MAX</sub>	°F (°C)	311	(155)
Thermal Impedance	R <sub>TH</sub>	°F/watt (°C/watt)	45.9	(7.7)
Thermal Time Constant	τ <sub>TH</sub>	min	28.8	
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
- 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

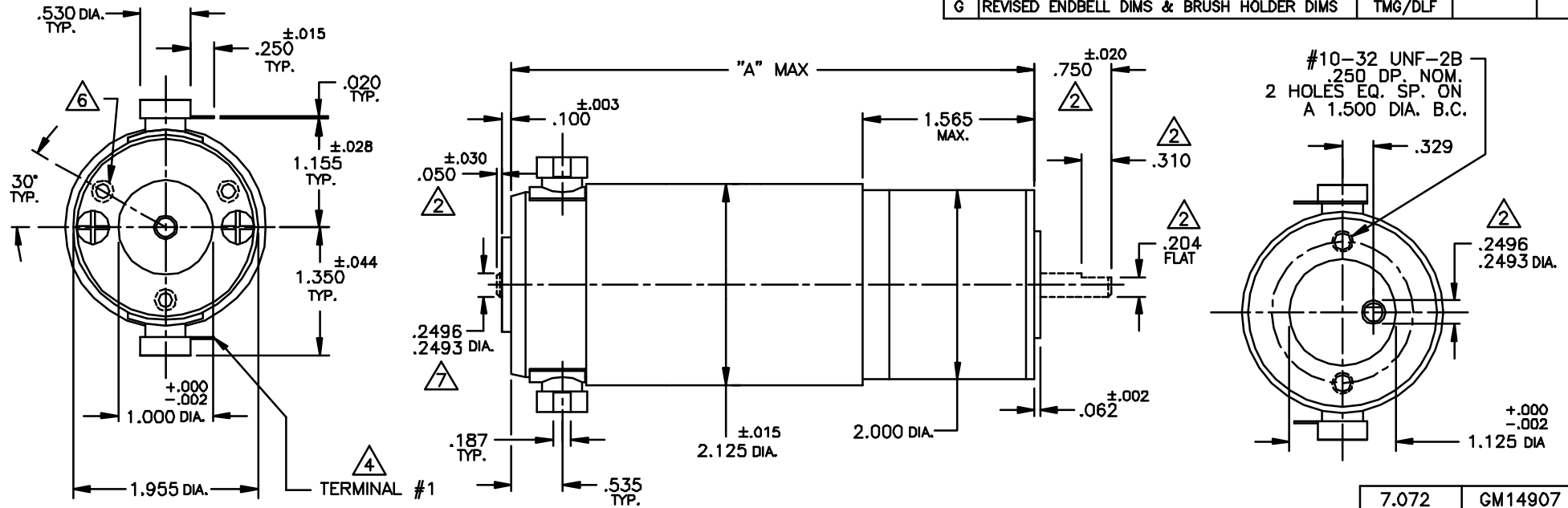


All values are nominal. Specifications subject to change without notice. Graphs are shown for reference only.

© 2001 Pittman.

NOTICE: CONFIDENTIAL PROPRIETARY INFORMATION THIS PRINT CONTAINS IDEAS, INFORMATION, AND INTELLECTUAL PROPERTY WHICH ARE THE EXCLUSIVE PROPERTY OF PITTMAN, DIVISION OF PENN ENGINEERING & MANUFACTURING CORP. RECIPIENT MUST KEEP THE INFORMATION DISCLOSED HEREIN CONFIDENTIAL AND RECIPIENT IS EXPRESSLY PROHIBITED FROM COPYING OR PUBLICATION OF THIS PRINT EXCEPT TO OTHERS IN THEIR ORGANIZATION ON A NEED-TO-KNOW BASIS.

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:

- SHAFT ROTATION IS FIGURED WHILE VIEWING THE MOUNTING END, WITH POSITIVE VOLTAGE (+) APPLIED TO TERMINAL #1. SEE CHART.
- ALL OUTPUT SHAFT DIMENSIONS NOTED ARE STANDARD (10-535).
- FOR ALL OTHER SHAFT CONFIGURATIONS, REFER TO DATA SHEET FOR SHAFT PART NUMBERS.
- ENDPLAY: MOTOR SHAFT PRELOADED PER P-107 (BALL BEARINGS), OR .015 MAX ENDPLAY (SLEEVE BEARINGS). OUTPUT SHAFT: .020 MAX ENDPLAY.
- TERMINALS WILL MATE WITH 187 SERIES AMP, INC., OR ETC, INC. PUSH ON RECEPTACLE.
- 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.
- OPTIONAL REAR MOUNTING PATTERN, #6-32 UNC-2B, .200 NOM DP. ON A 1.531 DIA. B.C.
- 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 ±1/84 DECIMAL ±.015 ANGLE ±1° BREAK ALL SHARP EDGES	FILE:	150\196	
	DRAFTED BY:	KUH	DATE: 12 SEP 95
MATERIAL:	ENGINEERED BY:	KUH	12 SEP 95
	APPROVED BY:	JRM	15 SEP 95
FINISH:	NEXT ASSY:		
	USED ON:		

**PITTMAN**  
A Division of Penn Engineering & Manufacturing Corp.  
2000 North 10th Street, PA 15106

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