

# GM14902S018

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)	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)	35.9	(1017)
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				
Channels			3	
Resolution		CPR	500	

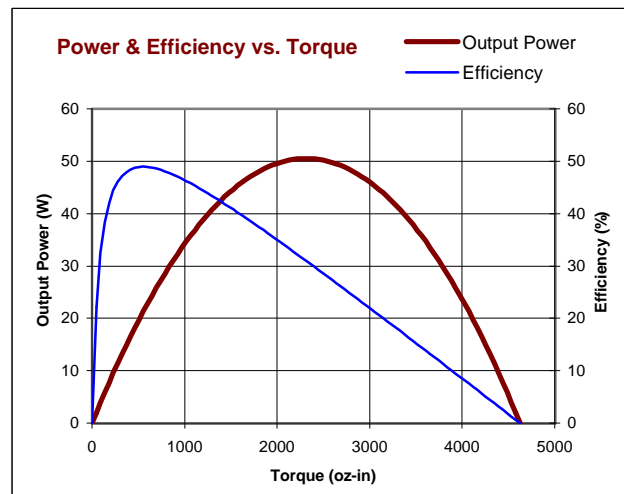
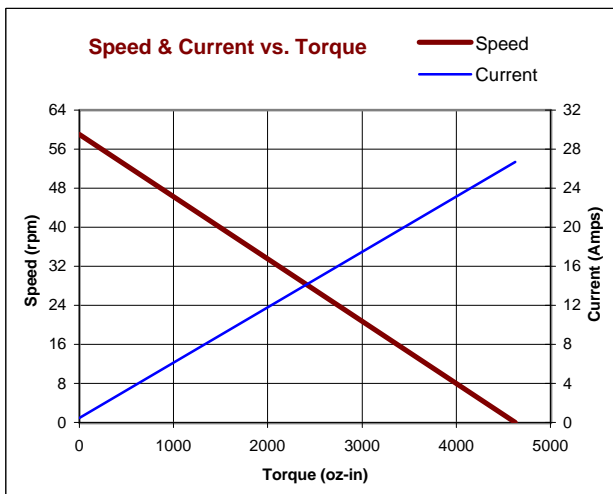
1 - Specified at max. winding temperature at 25°C ambient without heat sink. 2 - Theoretical values supplied for reference only.  
3 - Effective gearbox efficiency for this unit improved by use of ball bearings.

## Included Features

- 2-Pole Stator
- Ceramic Magnets
- Heavy-Gauge Steel Housing
- 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

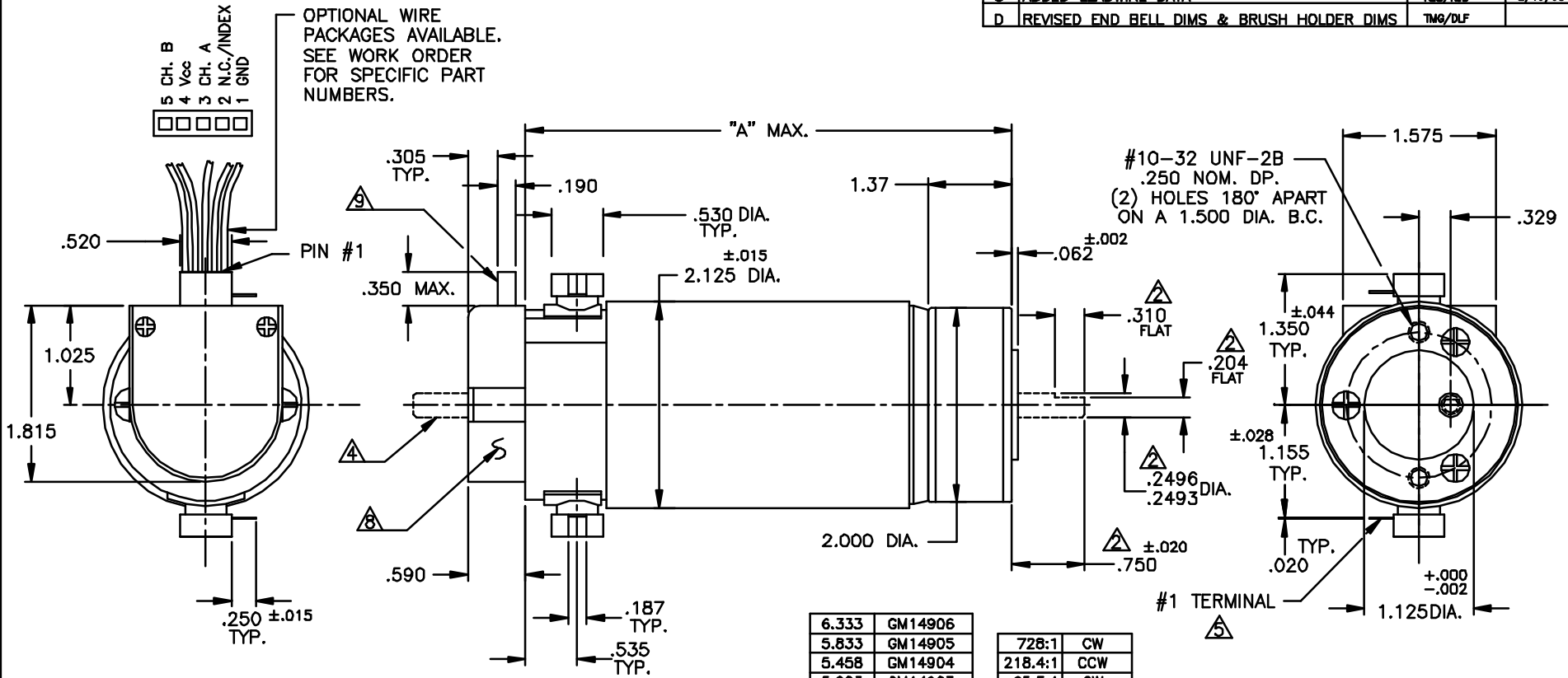


All values are nominal. Specifications subject to change without notice. Graphs are shown for reference only.

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REVISIONS				
LTR	DESCRIPTION	DRFT/ENGR	DATE	APPR
B	REDRAWN & REVISED	DCS/DCS	11/10/95	JRM
C	ADDED LEADWIRE DATA	RJS/RJS	2/13/98	JRM
D	REVISED END BELL DIMS & BRUSH HOLDER DIMS	TMG/DLF		



- NOTES:
- \* 1. SHAFT ROTATION IS SHOWN WHILE VIEWING THE MOUNTING END, WITH POSITIVE VOLTAGE (+) APPLIED TO THE #1 TERMINAL.
  - △ ALL OUTPUT SHAFT DIMENSIONS NOTED ARE STANDARD (10-535). FOR ALL OTHER SHAFT CONFIGURATIONS, REFER TO DATA SHEET FOR SHAFT PART NUMBERS.
  - 3. FOR MOTOR SHAFT CONFIGURATION, SEE DATA SHEET.
  - △ OPTIONAL SHAFT EXTENSION AVAILABLE. REFER TO DATA SHEET FOR SPECIFICS.
  - △ TERMINALS WILL MATE WITH '187' SERIES AMP INC. OR EQUIV. PUSH-ON RECEPTACLE.
  - 6. MOTOR BALL BEARINGS: PRELOAD PER P-107.
  - 7. OUTPUT SHAFT ENDPLAY: .020 MAX.
  - △ ENCLOSED IS A H.P. HEDS-91X0 OPTICAL ENCODER MODULE. SEE DATA SHEET FOR PART NUMBERS.
  - 9. MOLEX CENTER CRIMP TERMINAL HOUSING, (2695 SERIES), WILL ACCEPT MOLEX MATING TERMINALS (2759).

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		FILE: 150\314	
FRACTION ±1/84	DECIMAL ±.015	DRAFTED BY DCS	DATE 11/9/95
ANGLES ±1/16	±.010	ENGINEERED BY DCS	11/9/95
BREAK ALL SHARP EDGES	±.010	APPROVED BY JRM	XX/XX/97
MATERIAL:		NEXT ASSY:	
FINISH:		USED ON:	

**PITTMAN**  
PENN ENGINEERING & MANUFACTURING CORP.  
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TITLE: OUTLINE AND MOUNTING DIMENSIONS GM149XX STANDARD W/H.P. 91X0 ENC.	
DWG. NO. B- 150-314	REV. D
SCALE: D.N.S.	SHEET