



GM8224S011

Lo-Cog® DC Servo Gearmotor

| Assembly Data | Symbol | Units | Value | |
|---------------------------------------|------------------|---|---------|------------|
| Reference Voltage | E | V | 24 | |
| No-Load Speed | S _{NL} | rpm (rad/s) | 720 | (75.4) |
| Continuous Torque (Max.) ¹ | T _C | oz-in (N-m) | 15 | (1.0E-01) |
| Peak Torque (Stall) ² | T _{PK} | oz-in (N-m) | 42 | (3.0E-01) |
| Weight | W _M | oz (g) | 11.2 | (316) |
| Motor Data | | | | |
| Torque Constant | K _T | oz-in/A (N-m/A) | 6.18 | (4.36E-02) |
| Back-EMF Constant | K _E | V/krpm (V/rad/s) | 4.57 | (4.36E-02) |
| Resistance | R _T | Ω | 17.0 | |
| Inductance | L | mH | 9.35 | |
| No-Load Current | I _{NL} | A | 0.09 | |
| Peak Current (Stall) ² | I _P | A | 1.41 | |
| Motor Constant | K _M | oz-in/√W (N-m/√W) | 1.49 | (1.05E-02) |
| Friction Torque | T _F | oz-in (N-m) | 0.35 | (2.5E-03) |
| Rotor Inertia | J _M | oz-in-s ² (kg-m ²) | 2.3E-04 | (1.6E-06) |
| Electrical Time Constant | τ _E | ms | 0.54 | |
| Mechanical Time Constant | τ _M | ms | 14.7 | |
| Viscous Damping | D | oz-in/krpm (N-m-s) | 0.020 | (1.4E-06) |
| Damping Constant | K _D | oz-in/krpm (N-m-s) | 1.6 | (1.1E-04) |
| Maximum Winding Temperature | θ _{MAX} | °F (°C) | 311 | (155) |
| Thermal Impedance | R _{TH} | °F/watt (°C/watt) | 70.5 | (21.4) |
| Thermal Time Constant | τ _{TH} | min | 10.7 | |
| Gearbox Data | | | | |
| Reduction Ratio | | | 6.3 | |
| Efficiency ³ | | | 0.95 | |
| Maximum Allowable Torque | | oz-in (N-m) | 100 | (0.71) |
| Encoder Data | | | | |
| Channels | | | 3 | |
| Resolution | | CPR | 500 | |

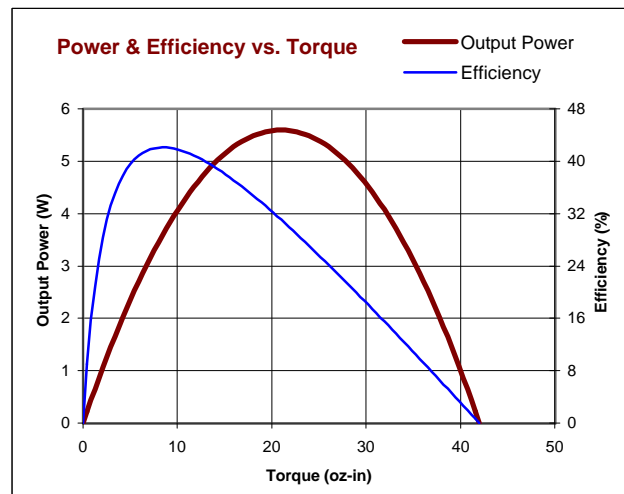
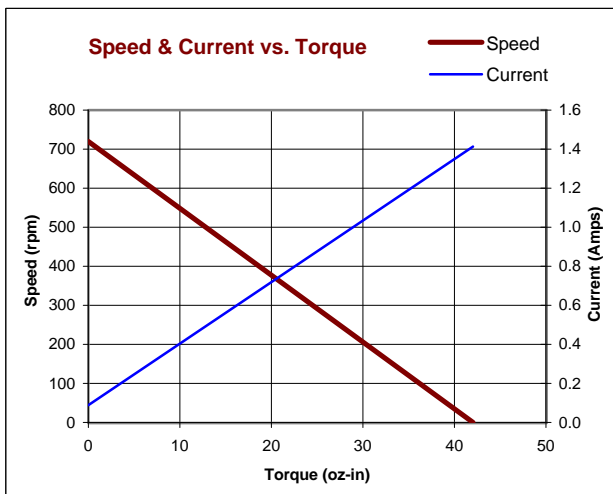
1 - Specified at max. winding temperature at 25°C ambient without heat sink. 2 - Theoretical values supplied for reference only.
3 - Effective gearbox efficiency for this unit improved by use of ball bearings.

Included Features

- 2-Pole Stator
- Ceramic Magnets
- Heavy-Gauge Steel Housing
- 7-Slot Armature
- Silicon Steel Laminations
- Stainless Steel Shaft
- Copper-Graphite Brushes
- Diamond Turned Commutator
- Motor Ball Bearings
- Output Ball 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



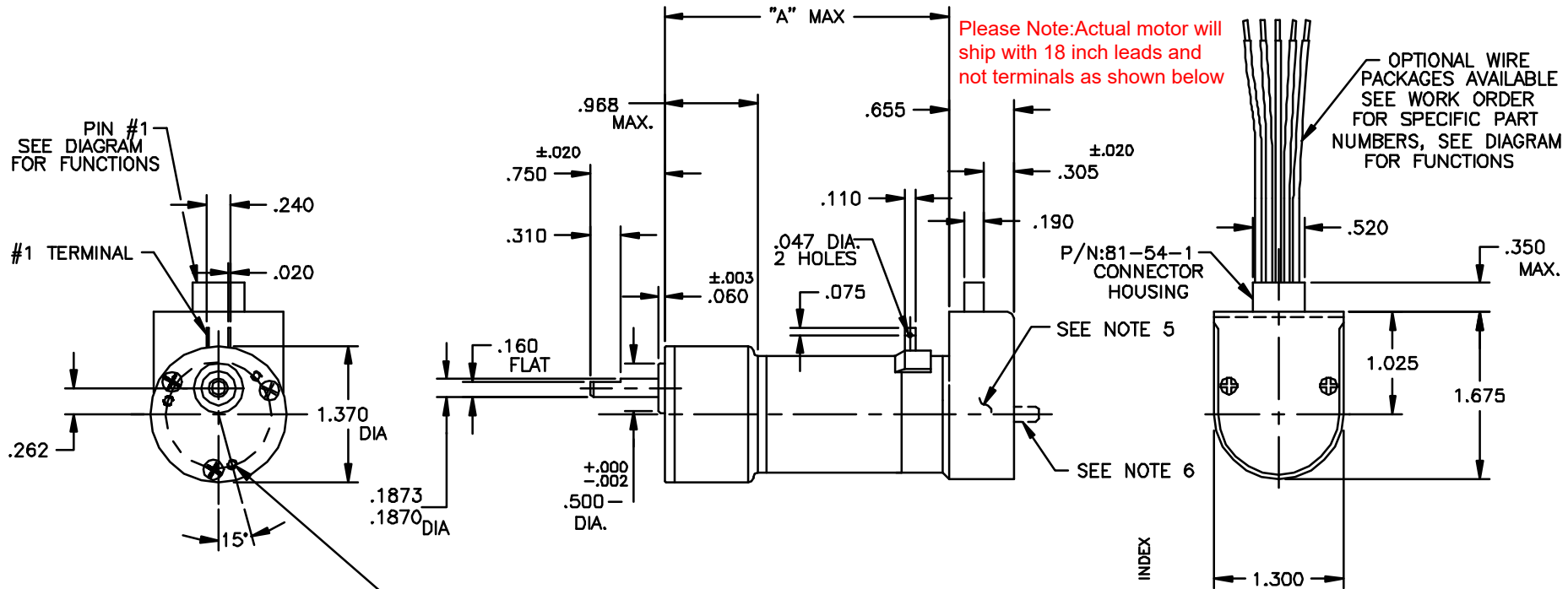
All values are nominal. Specifications subject to change without notice. Graphs are shown for reference only.

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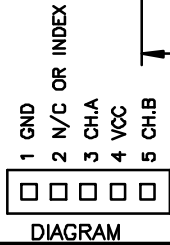
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| REVISIONS | | | | |
|-----------|------------------|-----------|------|------|
| LTR | DESCRIPTION | DRFT/ENGR | DATE | APPR |
| B | REDRAWN, UPDATED | DLF/DLF | | |



Please Note: Actual motor will ship with 18 inch leads and not terminals as shown below



| | | | |
|--------------|----------------|---------|-------|
| 187.7/96.0:1 | CCW | GM87X4 | 3.230 |
| 60.5/31:1 | CW | GM87X3 | 2.980 |
| 19.5/10:1 | CCW | GM87X2 | 2.855 |
| 6.3:1 | CW | MODEL | "A" |
| GEAR RATIO | SHAFT ROTATION | "A" MAX | |

- NOTES:
- SHAFT ROTATION IS DETERMINED WITH POSITIVE VOLTAGE (+) ON #1 TERMINAL, WHILE LOOKING AT MOUNTING END.
 - MOTOR IS PRELOADED BALL BEARINGS PER P-107,.020 MAX. ON OUTPUT SHAFT.
 - MAX. GEARBOX TORQUE RATING IS 100 oz.in. STANDARD GEARBOX, 160 oz.in. FOR CUT STEEL.
 - TERMINALS ARE TIN PLATED FOR SOLDERING, WILL MATE WITH .110 PUSH-ON RECEPTACLE.
 - ENCLOSED IS A HEDS-91X0 OPTICAL ENCODER.
 - OPTIONAL REAR SHAFT EXTENSIONS AVAILABLE.
 - ENCODER LEAD CONNECTIONS TO BE DONE PER INDIVIDUAL LEAD WIRE DRAWING.

| | | |
|--|------------------------------------|---|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTION DECIMAL ANGLES ±1/64 ±.015 ±15° ±.010 ±.005 BREAK ALL SHARP EDGES | FILE: 150\306 | PITTMAN PENN ENGINEERING & MANUFACTURING CORP. 2800 East 10th Ave., Erie, PA 16510 |
| | DRAFTED BY: DLF DATE: 15 JUL 94 | |
| MATERIAL: | ENGINEERED BY: DLF DATE: 15 JUL 94 | TITLE: OUTLINE AND MOUNTING DIMENSIONS GM8700 W/9100, STANDARD |
| FINISH: | APPROVED BY: | DWG. NO. B-150-306 REV. B |
| | NEXT ASSY: | SCALE: NONE SHEET 1 OF 1 |
| | USED ON: | |